Wizcon for Windows and Internet

User's Guide

Version 7.5

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Chapter 1
Using this Guide

About this chapter:

This chapter describes how to use this guide, as follows:

About this Manual, the following page, describes the chapters in this user's guide.

What You Should Know, page 1-6, describes things you should know and the typographical convention used in this guide.

Registering Your Product, page 1-7, describes how to register your product and how to receive technical support.

Wizcon for Windows and Internet User's Guide, designed for Wizcon for Windows and Internet running under Windows NT and Windows 95 or 98 provides developers and system integrators with the necessary information to build process and control applications with Wizcon.

If you are using Wizcon for Windows and Internet for the first time, you may proceed in one of the following ways:

- Read this guide from cover to cover, exactly as it is presented.
- Read Chapters 1 through 5. These chapters provide you with basic information on the Wizcon installation procedure, guidelines for designing an application, and a description of the Wizcon Application Studio. Then, read the chapters you need, depending on the tasks you want to perform.

If you are an experienced Wizcon user, read *Chapter 2, Introducing Wizcon,* to learn about the available features, and then use the *Table of Contents* and the *Index* to find the information you need.

This guide contains the following sections:

Chapter 1, Using this Guide, covers basic information about this manual.

Chapter 2, Introducing Wizcon, introduces Wizcon and its features.

Chapter 3, Installing Wizcon for Windows and Internet, describes the system requirements and installation procedure.

Chapter 4, Getting Started, provides guidelines for building applications with Wizcon.

Chapter 5, Getting to Know the Application Studio, describes the operational framework of Wizcon.

Chapter 6, Communication Drivers, describes how to define communication drivers and blocks.

Chapter 7, Tags, describes how to define and use *tags*, which are contact points through which Wizcon receives data from the controller and/or outputs data to it.

Chapter 8, Alarms, describes how to define and use *alarms*, which are internal system messages that provide the operator with information concerning events generated by the system.

Chapter 9, Events Summaries, describes different options for alarm display: in a regular Events Summary window or in a Popup Event Summary.

Chapter 10, Creating Events Summary Profiles, describes how to define the way alarms are displayed in a browser.

Chapter 11, Creating Images and Picture Viewers, describes how to work with Wizcon Images and how to create a Picture Viewer so that the Image can be viewed in a browser.

Chapter 12, Image Editor, describes how to create and view images.

Chapter 13, Image Animation, describes the process of image animation.

Chapter 14, Creating Trend Viewers, describes how to create and modify a Trend Profile, to compare device functionality and correlate actions and responses, and how to create a Trend Viewer that displays these past and current events in a browser.

Chapter 15, Generating HTML Pages, describes how to generate and edit HTML pages.

Chapter 16, Wizcon Language, describes how to create programs that enhance system capabilities.

Chapter 17, Recipes, describes how to create, define and apply *recipes* and *model recipes*. A recipe is a list of tag values that can be saved and applied in specific control processes as a group, to cause the process to enter a desired state. Each recipe belongs to a *model*, which is used to group recipes and provide the list of tags from which the recipes are derived.

Chapter 18, Charts, describes how to define, edit and view charts to provide graphical views of past and current activities recorded by the Wizcon system.

Chapter 19, History Viewers, describes how to generate and use History Viewer lists to provide you with simple and straightforward data concerning tags and tag values over specific periods of time.

Chapter 20, Reports, describes how to define customized reports which contain free text and calculated field data.

Chapter 21, Macros, describes how to define *macros*, special programs that execute pre-defined actions, commands, or programs.

Chapter 22, Wizcon DDE Support, describes how to define Wizcon as a DDE client or server.

Chapter 23, Wizcon Network, describes how to design and operate a Wizcon Network.

Chapter 24, WizSQL -Wizcon SQL Support, describes how to use WizSQL both as a client and server.

Chapter 25, Multiple Tags, describes how to define multiple tags. These tags enables you to adjust system parameters and establish a proper Wizcon application working environment.

Appendix A, Wizcon for Windows and Internet Files, describes data and configuration files used by Wizcon.

Appendix B, Converting Wizcon 5 Applications, describes how to convert Wizcon 5 applications to Wizcon for Windows.

Appendix C, Tuning Parameters, describes how to use tuning parameters to optimize performance and enhance functionality.

Appendix D, VFI5FST (VFI Fast), describes the VFI5FST tuning parameter.

Appendix E, Wizcon DOS to Wizcon 7 Conversion Utility, provides instructions on how to convert Wizcon DOS applications to Wizcon 7 for Windows.

Appendix F, Networking with OPC Using DCOM, provides instructions for accessing data from remote OPC servers using DCOM, and explains how to troubleshoot DCOM problems with OPC servers.

Appendix G, Wizcon ASCII (ILS) File Format, describes the structure and format of the Wizcon for Windows and Internet ASCII (ILS) file.

Appendix H, Glossary, provides a description of the terms and definitions used in this manual.

Before you start using Wizcon and work through this user's guide, you should be familiar with the Windows NT and Windows 95 operating systems. You should also know how to do the following:

- Operate an IBM-PC or compatible.
- Use a mouse.
- Use a dialog.

Typographical Convention

This guide uses the following typographical conventions:

⇨ This symbol indicates a menu or menu path, and the item within the menu that you need to select to perform the task as it is described in the section that follows. For example, Menu ⇨ Operator

This symbol indicates that a feature is not supported or applicable on the Web.

Registering Your Product

You are important to us, and it's important for us to know who our customers are. Registering your Wizcon product enables us to provide you with better services and important notifications about the product. Please take a minute to complete the Licensing Agreement included with your product and send it to PC Soft.

Receiving Technical Support

You can receive technical support from your local distributor. To receive prompt support, make sure that you complete the Registration form and send it to PC Soft.

Chapter 2
Introducing Wizcon

About this chapter:

This chapter describes Wizcon for Windows and Internet and its features, as follows:

What is Wizcon for Windows and Internet?, the following page, describes Wizcon.

Wizcon for Windows and Internet Main Features, page 2-4, describes Wizcon Main Features.

Wizcon is an advanced Supervisory Control and Data Acquisition (SCADA) system used as an applications development tool that enables system integrators to create sophisticated Supervisory and Control applications for a variety of industries.

Wizcon is an application generator. This means that all the control and monitoring facilities are already built into the system, and only the project definitions need to be provided by the application engineer. Minimal computer or programming skills are required.

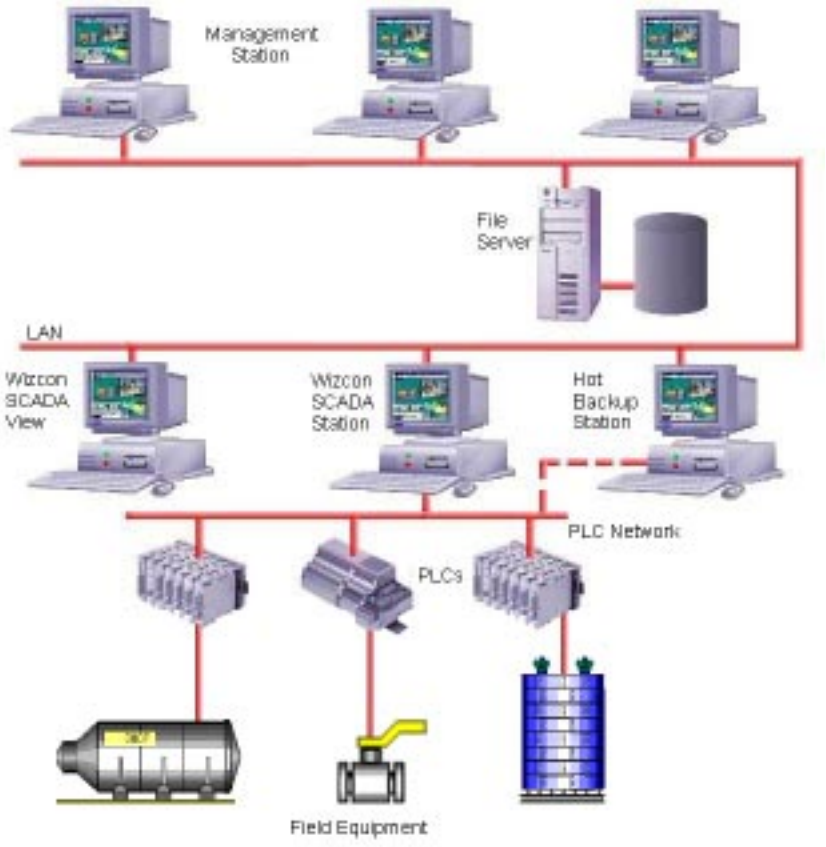
Wizcon takes advantage of the powerful, preemptive, multi-tasking capabilities of the Windows 95 or 98 and NT operating systems, and a built-in event-driven mechanism to achieve the utmost performance and data integrity. It also uses its interface mechanisms to implement clear and efficient visualization of its components.

Wizcon for Windows and Internet enables you to integrate your application with your Internet/Intranet network, promoting real-time Supervisory and Control using real-time graphics and event-driven information updates from any computing platform. It combines the benefits of SCADA, Java, HTML and Internet.

Wizcon for Internet applications can be accessed and used without requiring platform-specific software, client software installation, or plug-ins. The production floor can be safely monitored and controlled through a standard Web browser. You can also view both factory data and corporate information through a common interface, from any desktop or mobile computer.

A Wizcon application communicates with control equipment in the field, such as Programmable Logic Controllers (PLCs), measuring instruments, and other devices. As the equipment is monitored and data is recorded**,** Wizcon responds according to system logic requirements or operator requests.

Typical Wizcon SCADA Configuration



This section describes Wizcon main features and concepts. A glossary appears at the back of this book in which you can find descriptions of Wizcon terms and concepts.

Alarm Processing

When exceptional events occur, Wizcon selectively sends alarms to special files, pop-up windows, a web client, Images and printers. If you want to handle numerous alarms simultaneously, you can filter, sort and divide the alarms according to zones, names and priorities. Operators can acknowledge the reception of alarms and automatically receive instructions for handling them.

Automatic Network Optimization

In cases where there are very fast tag changes on the Wizcon station, and server is too loaded to send all the tag changes to web clients fast enough, only the newest tag values will be sent to the web client.

- In case the web client can not keep up with tag changes from the Wizcon for Internet station, it will process the latest tag value.
- This insures that the web client always displays the most updated information possible, even if the server or the web client are loaded and can not keep with the fast tag updates.

Background Processing

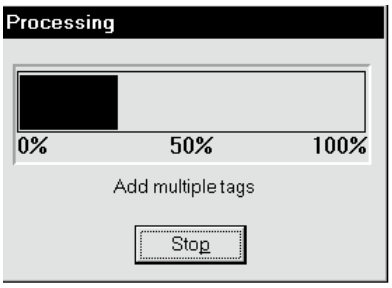
Wizcon enables you to process heavy jobs without temporarily disabling the use of the Wizcon system.

The background processing feature operates when:

- Loading an image file that is larger than 30K.
- Printing an image.
- Generating Events Summary and History Viewer reports.
- When using **MultiAdd**, **List**, and **Use** functions in the *Tag Definition* dialog. These functions are described in more detail in *Chapter 7, Tags*.

While the background processing is in progress, you can perform other operations.

The following is an example of a background *Processing* dialog:



The string above the **Stop** button in the dialog describes the task that is currently being executed. The **Stop** button can be activated to end the process. However, in some cases, the **Stop** button will not appear and no termination will be possible. During the process, the percentage covered will continuously be displayed in the dialog until the entire process is completed.

Built-in Report Generator

Designed specifically for supervisory and control systems, this report generator can produce customized daily shift reports, periodical reports, and event-driven reports. For more sophisticated reports you can use WizReport available on the Value Pack CD.

Charts and Reports

Wizcon charts provide graphical views of process behavior and operational trends over a period of time. A single chart can display historical and real-time trends in distinctive colors and styles.

You can configure an X-Y chart with up to 16 related process parameters and scroll along the X and Y axis while zooming in and out to view the desired details.

The Wizcon built-in report generator keeps you continuously informed and up to date on all plant activities. Designed specifically for supervisory and control systems, this report generator can automatically produce customized daily shift reports, periodical reports, and event-driven reports.

Database Connectivity

WizSQL module allows application designers to build event-driven SQL queries to read and write Wizcon data from and to database tables. This simplifies the exchange of information with other applications.

Easy Maintenance

Wizcon for Internet:

- Reduces operating costs by enabling users to build a single application instead of a networked solution of multiple applications.
- Eases the administrative burden tremendously, since it is Java based and Java is already an integral part of the web browser installed on most desktops.
- Need not be installed locally on each machine. Updates can be distributed centrally through web servers.
- Does not introduce new configuration, resource, or compatibility issues; nor does it require extra administrative or maintenance effort for each machine. In addition, Wizcon for Internet relies on Java's portability and eliminates the need to support different versions of applications on different platforms.

Can be viewed online with just a browser.

Events Summary

Events Summaries display alarms according to the user's specifications. The user can apply a filter to display only those alarms from a certain zone or of a certain priority. The alarms can also be sorted in the Events Summary by the same criteria. A user can also decide what alarm information is to be displayed, such as alarm start time, end time, acknowledge time, and in what order those fields will appear.

Furthermore, you can rely on Wizcon's foolproof, event-driven alarm notification to detect all alarms in real time, ensuring that you never lose data or miss alarms.

Events Summary Profiles

Events Summary Profiles determine how active alarms are displayed in a browser according to the definitions defined by the system integrator.

Events Summary Viewer

An Events Summary Viewer features real-time monitoring of alarms according to the definitions specified in the Events Summary Profile. This enables the operator to:

- Monitor and acknowledge alarms in real time.
- Adjust alarm display, resize columns and change alert sorting.
- Change the alarm filter and view only a specific type of alarm. For example, from a certain zone or of a certain priority.
- View HTML alarm assist files.
- View alarm background and text colors set by alert severity and zone.

Hot Backup Support

A Wizcon for SCADA station can serve as a backup to other stations. If the main SCADA system fails, the backup station immediately takes over and continues to function. ‘

Innovative Graphics Presentation

Wizcon employs the most advanced techniques for presenting graphics. They include:

- Drawing a single large image that represents the entire plant and then zooming in on a selected area to obtain detailed views of small and even hidden elements. In addition, your image can consist of more than 64 layers, with each layer representing specific information. Operators can then choose and mix layers, accessing only the information they need and are authorized to see.
- Defining dynamics so that as parameters in the field change, so do graphical drawings and textual displays. For instance, if a tank is filling, the respective tank drawing will be filled accordingly and the display of the liquid level will be updated numerically.
- Defining any object in the image as a *trigger*, so that whenever that object is selected, one of several operations, such as macro activation, will be automatically performed.
- Designing an image using the Wizcon simple, yet powerful, graphic editor that includes a variety of drawing tools designed specifically for Wizcon for Internet requirements. A unique editing feature enables you to easily modify any object and simultaneously apply the changes to all the applications' diagrams.

  In addition to drawing images within the Wizcon framework, graphic files that were generated using other software programs can be imported to the Wizcon image editor.
- Using the Wizcon clusters library with a variety of prebuilt objects, including valves, pumps, and other industry-standard components. You can define or change the parameters of each object and save the changes in the Wizcon for Internet configuration database.

Millisecond Time Stamping

Wizcon samples PLCs at up to 50 milliseconds resolution and can receive data with a time stamp of up to 1 millisecond resolution. This data is registered in Wizcon history files according to the time stamp. It allows operators to trace the sequence of plant events exactly as they occurred.

Networking

The Wizcon solution provides a smooth growth path from a standalone workstation, through the plant floor configuration, to plant-wide network architecture that connects the plant floor with existing file servers and other management systems.

The Wizcon network uses client-server architecture, allowing users to transparently define network data objects without defining network tags or alarms in the local configuration database.

Wizcon can be connected to other Wizcon stations or Wizcon stations using NetBIOS or TCP/IP protocol. Thus, tags and alarms defined on any Wizcon station can be used on the same network as Wizcon for Internet.

Online Design

You can make changes during runtime and view the results immediately.

Open Architecture

Wizcon integrates seamlessly with your existing databases, spreadsheet and other customized applications, allowing you to focus on productivity rather than compatibility.

- Wizcon Virtual File Interfaces (VFIs) enable the designer to select different file formats to be used by WizPro for historical data logging and report generation. The system engineer can use a combination of different file systems and databases with the application, for data manipulation convenience and optimum performance.
- A comprehensive set of Application Programming Interfaces (APIs) is included with every Wizcon for Windows and Internet package to enable smooth integration with customized programs and application modules.

- Wizcon supports two-way Dynamic Data Exchange (DDE) links for exchanging data with other DDE-compatible applications.
- Wizcon SQL Interface enables application designers to build event-driven SQL queries to read and write Wizcon for Internet data from and to database tables, simplifying the exchange of information with other applications.
- Wizcon is managed by a real-time, event-driven kernel called **WizPro**. This module includes a set of APIs which can be used to write supplemental Wizcon programs in C and Visual Basic language, to meet the specific requirements of any project. For further information, refer to the Read Me file located in the Wizcon Toolkit.
- Wizcon is compatible with a wide variety of PLCs and other control system components. Custom adaptation is supported through a fully documented toolkit.
- Wizcon's OPC capabilities enable system integrators to create a common interface for exchanging data with hardware field devices or other software that can be reused by this client program, and other HMI, SCADA and custom applications.

Picture Viewer

This feature displays an online dynamic graphical drawing representing the factory floor. It serves as the operator's main tool for viewing, interacting with and controlling the factory floor, through dynamic graphic representation.

PLCs Sampler

Wizcon samples PLCs at up to 50 milliseconds' resolution and can receive data with a time stamp of up to 1 millisecond resolution. Wizcon can sample up to 16 networks of PLCs and other field devices.

Recipes

Wizcon provides recipes - lists of tag values that are applied to specific control processes as groups.

Operators can edit, load and save recipes for convenient handling of production processes and setting of control programs. Recipe management and downloading of production recipes from management systems is simple and straightforward.

Security on the Web

Wizcon applications take full advantage of the security features provided by the Web server, enabling user access control according to selected Web pages. A Firewall can be used to limit access according to IP addresses. Wizcon also offers the system integrator the power to limit the operations that the user is able to perform.

Tags

A Wizcon tag is used as an internal variable for:

- Calculations and display.
- Communication with PLCs in order to represent data from PLC memory, or to send commands to PLCs.

Tag values can be scanned and recorded to historical files according to several parameters specified by the user. Tags can also be assigned a DDE link definition and can therefore receive or send data to/from other applications.

Trend Profiles

The Trend feature provides real time and historical graphical view of tags' values over time.

Wizcon architecture provides additional benefits for remote control applications and applications where frequent causal access is required. For those applications historical display of data is critical. In such applications an operator may wish to log in to his application at the end of the day and check what happened during the day.

The Trend features include:

- Historical cache mechanism: Offers improved performance with minimum load on the server.
- Asynchronous historical data download: As a result the Trend is always responsive to the user.
- Performance: On a local area network, performance is similar to Wizcon for Windows. It is possible to use trends over dial-up connection.
- Display of multiple tags over time.
- Historical and on-line data support.
- X and Y axis labeling.
- Offers different line colors and line types.
- The Trend component takes less than 400K to download.

Trend Viewer

A Trend Viewer displays online past and current activities recorded by the Wizcon for Internet system according to definitions specified in the Trend Profile.

Wizcon Language

Wizcon includes a built-in control language called *Wizcon Language*, which can be used to automate plant tasks, augment control capabilities, and enhance system flexibility.

This language enables application engineers with little programming expertise to write useful command programs. Each system function, such as access to control devices, can be expressed in symbolic form in Wizcon Language, so that any application engineer can customize the application to meet specific plant design requirements.

Year 2000 Compatibility

Wizcon is compatible with the year 2000. Note that the support is up to 2036.

Chapter 3
Installing Wizcon for Windows and Internet

About this chapter:

This chapter describes Wizcon for Windows and Internet, Version 7.5, system requirements and the installation procedure.

System Requirements, on the following page, describes the required Wizcon for Windows and Internet system requirements.

Installation, page 3-4, describes how to install (and uninstall), Wizcon for Windows for Internet.

Starting Wizcon for Windows and Internet, page 3-10, describes how to start Wizcon for Windows and Internet

System Requirements

Before you install Wizcon, verify that you have the following:

Hardware

Computer: 200MHz Pentium, or higher.

Memory: 64MB minimum.

Hard Disk: 120 MB minimum free.

Display: VGA, SVGA, or any graphic adaptor that supports the operating system desktop. The display should be set at 256 colors or higher and the screen resolution should be set at 640 x 480 or higher.

Mouse: Any PC compatible mouse.

Parallel Port: Required for the Wizcon security plug.

Software

Operating System: Microsoft's Windows NT version 4.0 (or higher), or Microsoft's Windows 95, 98 can be used for application development.

- Properly configured TCP/IP: A fixed IP address is required for a web server. Or Windows 95,98 NetBEUI Protocol.
- Web server: A web server is required for publishing the application, (not for development).
- Browser: A Java 1.1-enabled browser is required. Netscape Communicator 4.0 or higher, or Microsoft Internet Explorer 4.1.
- HTML Editor: Any HTML editor may be used.

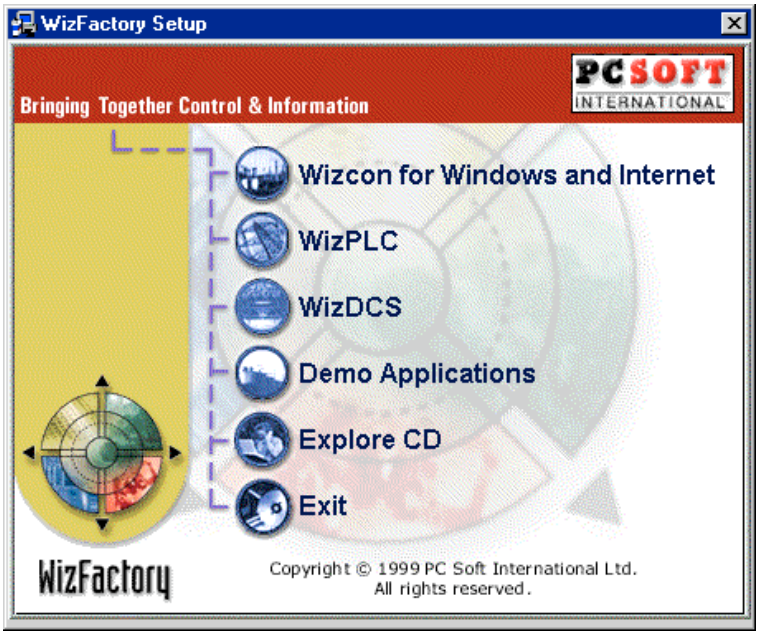
The following is required to publish a Wizcon application on the Web.

- Windows NT 4.0.
- Java 1.1-enabled browser
- A web server. For example the Netscape FastTrack Server 2.1 that can be downloaded from the Netscape web site at http://www.netscape.com), or the Microsoft Internet Information Server that can be downloaded from the Microsoft web site.

It is strongly recommended that you close and exit all Windows programs before running the installation procedure.

➤ **To install Wizcon:**

1. Insert the CD-ROM into the CD-ROM drive. The *WizFactory Setup* menu is automatically displayed:



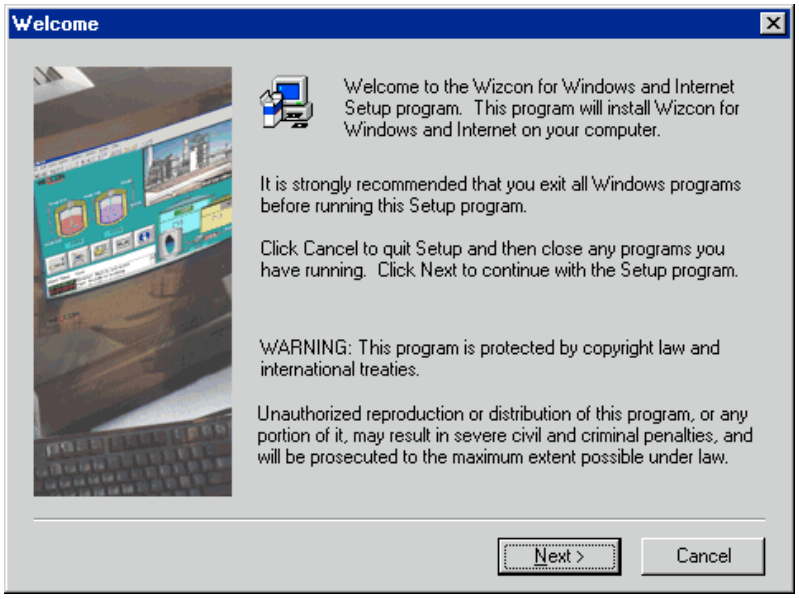
The Master Setup program contains the following options:

- **Wizcon for Windows and Internet**: Loads the Setup program for the Wizcon for Windows and Internet installation program.
- **WizPLC**: Loads the Setup program for WizPLC installation program.

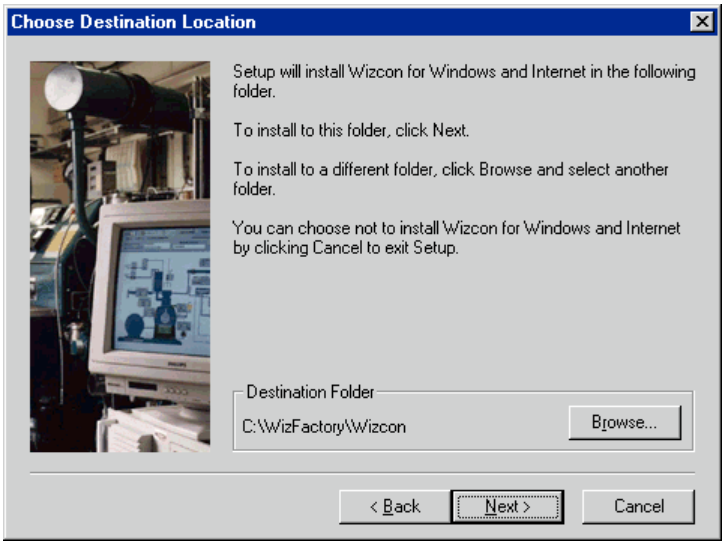
- **WizDCS:** Load the Setup program for WizDCS.
- **Wizcon Demo Applications**: Enables you to install Wizcon demo applications, such as Chemicals and Building and Water. Different demo applications run on Windows 95/98 and Windows NT. The resolution of your screen should be set to either:
  Resolution 1024 x 768 or
  Resolution 800 x 600
- **Explore the CD**: Opens Windows Explorer, enabling you to view the CD contents.
- **Exit**: Exits the Master Setup program.

  If the menu is not automatically displayed. Click on the **Start** button, select **Run** and enter: **D:\setup.exe** into the **Open** field, where "D" is your CD-ROM drive. Click **OK**.

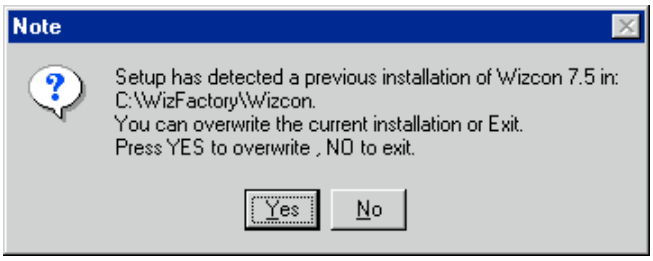
2. Select **Wizcon for Windows and Internet** The *Welcome* dialog is displayed:


Welcome
Welcome to the Wizcon for Windows and Internet Setup program. This program will install Wizcon for Windows and Internet on your computer.
It is strongly recommended that you exit all Windows programs before running this Setup program.
Click Cancel to quit Setup and then close any programs you have running. Click Next to continue with the Setup program.
WARNING: This program is protected by copyright law and international treaties.
Unauthorized reproduction or distribution of this program, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under law.
Next >
Cancel

3. Click the **Next** button to continue the installation. The *Choose Destination Location* dialog is displayed:


Choose Destination Location
Setup will install Wizcon for Windows and Internet in the following folder.
To install to this folder, click Next.
To install to a different folder, click Browse and select another folder.
You can choose not to install Wizcon for Windows and Internet by clicking Cancel to exit Setup.
Destination Folder
C:\WizFactory\Wizcon
Browse...
< Back
Next >
Cancel

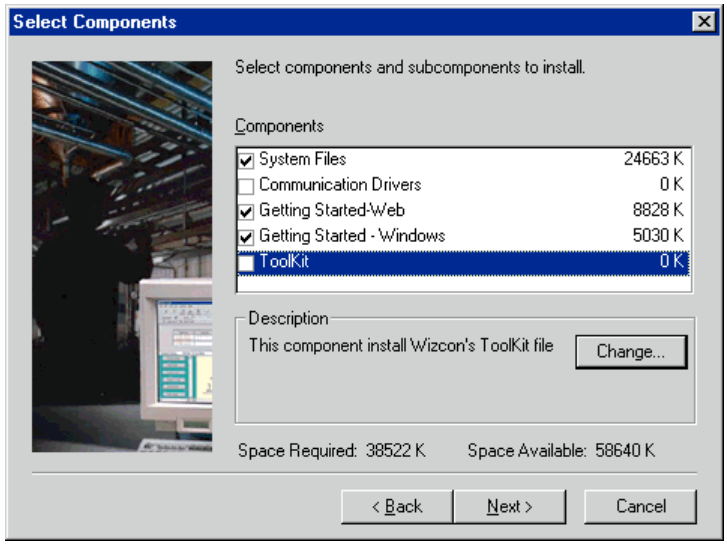
4. If you have a previous version of Wizcon installed, you are prompted to overwrite the previous version or to Exit the installation, in the following note:


Note
Setup has detected a previous installation of Wizcon 7.5 in:
C:\WizFactory\Wizcon.
You can overwrite the current installation or Exit.
Press YES to overwrite , NO to exit.
Yes
No

It is recommended to click **Yes** to overwrite the previous installation.

5. Click the **Next** button to install Wizcon in the default folder: (C:\WizFactory\Wizcon). Click the **Browse** button if you want to change the default directory.

6. Press the **Next** button and the *Select Components* dialog is displayed:



In this dialog, you can select the following components for installation:

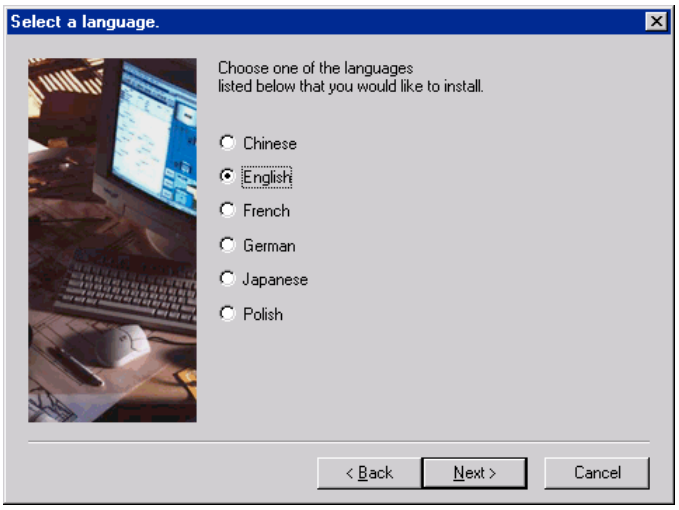
System Files: Select this option to install the Wizcon for Windows and Internet application files in the directory specified in the **Destination Directory** field in this dialog. The default directory is C:\WizFactory\Wizcon.

Communication Drivers (Optional): Select this option if you are using an external driver or controller. You can then select the drivers you want to install from a list of existing Wizcon device drivers. Press the Change button to open another dialog where you select the drivers you wish to install.
The dialog specifies the default directory in which Wizcon will be installed.

Getting Started - Web: Select this option to install the Wizcon for Internet Getting Started tutorials (Exercise and final applications).

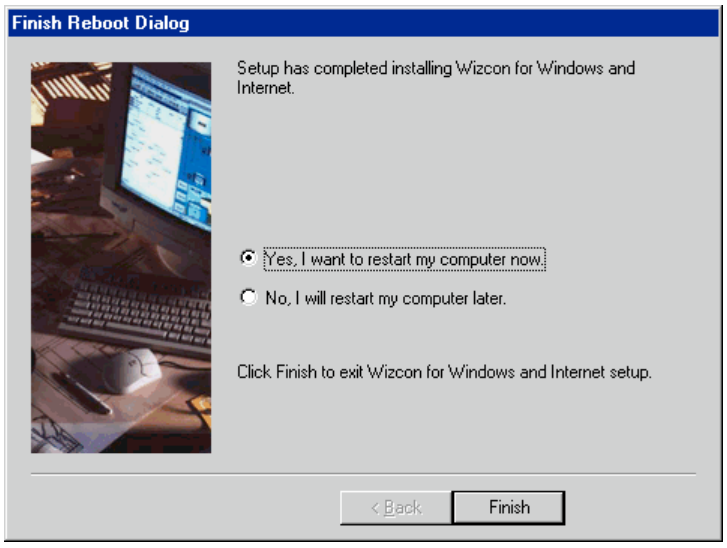
Getting Started - Windows: Select this option to install the Wizcon for Windows Getting Started tutorials (Exercise and final applications).

It is recommended to select the **Wizcon System files** option. Click the **Next** button. The *Select a Language* dialog is displayed:



Please note that you will not receive the Select Language dialog if you did not Check (✓) the System files.

7. Choose one of the languages that you want to install. Wizcon is localized for English, French, German, Chinese, Japanese, and Polish.
8. Press the **Next** button. A progress bar is displayed and the installation begins. When installation is complete the *Finish Reboot* dialog is displayed. Click **Yes** to restart your PC or click **No** to update later. It is recommended to restart your PC immediately after installation.


Finish Reboot Dialog
Setup has completed installing Wizcon for Windows and Internet.
Yes, I want to restart my computer now.
No, I will restart my computer later.
Click Finish to exit Wizcon for Windows and Internet setup.
< Back
Finish

9. Click **Finish**. Installation is complete.

Uninstalling Wizcon for Windows and Internet

Wizcon includes an Uninstall utility which you can use to remove Wizcon for Windows and Internet from your computer. The utility will only remove the directories, files, folders, icons and registration originally created by the Wizcon for Windows and Internet Installation program.

To achieve the best results, exit Wizcon and make sure that WizPro is not running in the background before using the Uninstall program. If WizPro is working, some files and icons may not be removed.

➤ **To launch the Wizcon for Windows and Internet Uninstall Program:**

1. Click on the **Start** button on your desktop, point to **Settings** and then click on **Control Panel**. The **Control Panel** folder is displayed.
2. Double-click on the **Add/Remove Programs** icon. The *Add/Remove Program Properties* dialog is displayed.
3. Select **Wizcon for Windows and Internet** from the list of available programs and click the **Add/Remove** button.
4. When the program has been removed, click the **OK** button to close the dialog.

Starting Wizcon for Windows and Internet

To start Wizcon, click on the **Start** button on your desktop, point to **Programs**, to **WizFactory** and then to **Wizcon**. Click on **Wizcon** to open the Studio.

Or,

Double-click on the shortcut to Wizcon icon on your desktop.

➤ **To create a shortcut to your Wizcon application (without going through the Project Wizard):**

1. Right-click on your desktop, and select **New** from the popup menu.
2. Select **Shortcut** from the popup menu. The *Create Shortcut* dialog is displayed.
3. Type the location and name of your application (*.wz7) or search for the application by clicking on the **Browse** button.
4. Press **Next** and select a name for the shortcut.
5. Press **Finish** to complete the operation.

Chapter 4
Getting Started

About this chapter:

This chapter describes how to open Wizcon, and suggests a workflow for building an Wizcon application, as follows:

Accessing Wizcon, on the following page, describes how to open Wizcon and the Wizcon Application Studio. A description of the Quick Access bar is also provided.

Designing an Application, page 4-5, describes what to do before you begin designing an application, as well as typical application requirements.

Wizcon Workflow, page 4-9, describes a typical workflow for application design.

Shutting Down, page 4-18, describes how to logout of the system and how to exit Wizcon.

You can access Wizcon and all its working components in two steps:

- **Step 1**: Opening Wizcon, as described below.
- **Step 2**: Opening the Wizcon Application Studio, which contains all the components you need to design an application, as described below.

Opening Wizcon

When you open Wizcon, a The Getting Started Wizard dialog is displayed, which enables you to open applications from the Wizcon Application Studio. The Getting Started Wizard is described in more detail in the *Using the New Wizcon Application Wizard* section of *Chapter 5, Getting to Know the Application Studio.*

➤ **To access Wizcon:**

1. Click the **Start** button on your desktop and point to **Programs**. Point to **WizFactory,** point to **Wizcon** and select **Wizcon** from the popup menu. The Wizcon Getting Started Wizard is displayed. Once you have created the type of application you want, The Quick Access bar is displayed:

   The Quick Access bar is described in more detail on the following page.

2. Click on the **Wizcon Application Studio** button in the Quick Access bar to access the Wizcon Application Studio. The Wizcon Application Studio is described in more detail in *Chapter 5, Getting to Know the Application Studio*.

You can now define yourself as a default user, so that next time you access Wizcon you can login to the system with a name and password. Defining users is described in more detail in *Chapter 5, Getting to Know the Application Studio*.

Quick Access Bar

The Quick Access bar enables you to:

- Login and out of the system.
- Open the Wizcon Application Studio for application design.
- Load an image, an Events Summary, a Chart and a History Viewer.
- Load and Save Recipes
- Open multiple tags.
- Open a single tag input
- Initiate Wizcon shutdown.

The main function of the Quick Access bar is to enable a user to initiate the following actions during runtime. These actions can be customized so that only authorized users can initiate them, as described in the *Operator Access Authorization* section of *Chapter 5, Getting to Know the Application Studio*.

Select	To do
	Open the Wizcon Application Studio, as described in *Chapter 5, Getting to Know the Application Studio*.
	Load a layout file (*.lay).
	Capture the layout of your open windows, and save them.
	Load an image file (*.vim). Images are described in more detail in *Chapter 12, Image Editor*.

Select	To do
	Load an Events Summary file (.ann). Events Summaries are described in more detail in *Chapter 9, Events Summaries.*
	Load a chart file (.chr). Charts are described in more detail in *Chapter 18, Charts*.
	Load a History Viewer file (.anl). History Viewer files are described in more detail in *Chapter 19, History Viewers*.
	Load a recipe file, as described in *Chapter 17, Recipes*.
	Save a recipe, as described in *Chapter 17, Recipes*.
	Open the multiple tags utility, as described in *Chapter 25, Multiple Tags*.
	Opens a Single Tag input, as described in *Chapter 7, Tags.*
	Users Setup, as described in *Chapter 5, Getting to Know the Application Studio.*
	Login to Wizcon.
	Logout of Wizcon.
	Exit Wizcon, as described on page 4-18.

A carefully designed application enables a user to easily and efficiently supervise an on-going process. This section describes the following:

- The basic information you need before designing an application, as described below.
- Typical application requirements, as described on the following page.

Before Designing Your Application

Before you start designing your application, you need to know some basic, but necessary details about the process for which you are creating the application:

- Obtain a list of variables that Wizcon will read and write from and to a PLC (I/O list or Tag list).
- Look at the control drawings to study the design and use of certain equipment.
- Look at the plant drawings to examine the layout of the plant for which you are designing the system.
- Find out what kind of reports users and managers want to receive, in what format and inclusive of what fields.
- Find out what kind of network you have, if it uses the NetBIOS or TCP/IP protocol, and the name of your network station.
- Determine any authorization definitions.
- Determine PLC definitions, such as blocks and addresses.

Once you have this background information, you can build an application that fully uses the resources of the plant's equipment. Remember that if you are not aware of the limitations of the equipment, you may cause damage.

If you are creating an application for a networking environment, refer to *Chapter 23, Wizcon Network* before you start designing the application.

Designing Multiple Applications

If you are designing multiple applications, you need to decide where to store your history files: on the local disk or on the server.

Using Wizcon network tags, the same application can run on many stations. The application can be designed on one station and copied to another station. The only difference will be the station name definition (and number).

Note: The tag, alarm and communication driver definitions should not be copied.

Tip: It is recommended to define the station name and number before you begin to build your application (images, charts and so on).

Typical Application Requirements

A successful Wizcon application takes into account the following:

Consistent Display Design

Process visualization accurately represents an on-going plant process, enabling a user to clearly understand the process status at any given time.

It is recommended that displays in the visualization remain consistent throughout the application. For example, if a tanks fill status is represented in percentage form, then all fill status should be represented in percentages.

Alarm Design

Alarms represent one of the most significant occurrences in a process. It is important to design alarms with different severity levels, zones and characteristics. This way, a user will recognize each alarm and react quickly and properly. It is important to mark all alarms that are not targeted to an Events Summary with an **Auto Ack** attribute so that they will not have to be acknowledged by the operator. For more details about alarms, refer to *Chapter 8, Alarms*.

Chart Design

Charts visually represent the process progression. When designing charts, you should take into account user requirements. For example, if a user needs to compare two tags to perform a certain task, it is recommended to include both tags on the same chart. Up to 16 tags may be represented on a single chart. For more details about Charts, refer to *Chapter 18, Charts*.

Tag Naming Conventions

Make sure that the name you assign to each tag clearly indicates what the tag represents. For example, all the tags that represent Flow Transmitters may be called FTxxx. This naming method is also convenient when adding a list of tags that are of the same type.

It is also recommended to name the stations in a predetermined manner. For example, according to plant area.

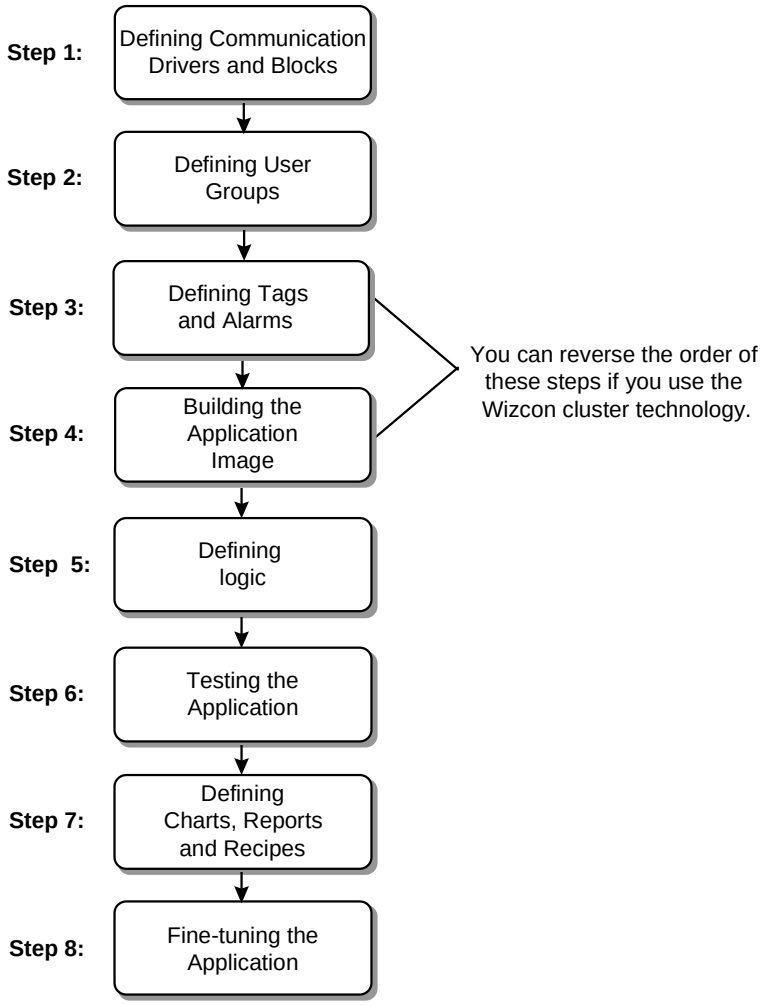
Logic

You can use Wizcon Language to create an application that can enhance the capabilities of control equipment working with Wizcon such as PLCs, and establish the connectivity interface between Wizcon and external computer applications. For more details about Wizcon language, refer to *Chapter 16, Wizcon Language*.

Wizcon enables you to define compound tags. A compound tag is a linear calculation based on values of other tags. Compound tags are described in more detail, in *Chapter 7, Tags*.

The Wizcon scripting language can also be used to implement logic. In addition to providing connectivity to SQL databases, WizSQL has powerful language functions and its event driven architecture provides excellent performance.

This section describes a workflow with which to build an application. The following sections describe each step in the workflow in more detail.



You can merge steps 3 and 4 into one, and complete the step in four stages:

- Define some of the tags.
- Build part of the image.
- Complete the image.
- Define the remaining tags.

Tip: If you are building a network application, you should define a network name and number before you begin the workflow. Remember to restart Wizcon.

Step 1: Defining Communication Drivers and Blocks

Blocks are to be defined logically to maximize the efficiency of Wizcon. This is done by defining blocks according to common sampling rates and consecutive addresses in the PLC.

After defining communication drivers and blocks, you need to restart Wizcon for changes to take effect.

When defining blocks, avoid:

- Leaving gaps of more than 20 addresses within the block.
- Defining blocks with a sampling rate that is different from the individual tag sampling rate.
- Defining the same tags in more than one block.
- Defining large blocks.

For more details about defining communication drivers and blocks, refer to *Chapter 6, Communication Drivers*.

Step 2: Defining User Groups

Defining user groups is important at this stage because each subsequent design level may call for user authorization. Once you define the user groups, you can add individual users at any time to any group.

Defining user groups later on in the design process is possible, but not recommended. For example, in a car production plant, engineers, managers and floor workers have different levels of authorization. If you assign authorization rights early in the design process, you will save valuable time in later stages of the design.

For more details about defining User Groups, refer to the *Operator Access Authorization* section in *Chapter 5, Getting to Know the Application Studio*.

Step 3: Defining Tags and Alarms

Defining Tags

Tags are I/O points that are mapped from the PLCs to Wizcon as well as to internal (dummy) and calculated (compound) variables. You can use tags in images, charts, alarms and all Wizcon functions.

When defining tags, make sure that tag and block sample rates do not conflict with each other.

For more details about defining tags, refer to *Chapter 7, Tags*.

Defining Alarms

Once you define the tags, continue by defining the alarms. Alarms notify a user of an event in the process. They can:

- Indicate the beginning of a process.
- Warn of a failure in part of the process.

When defining alarms it is possible to:

- Set different severity levels to control the grouping and displaying of the alarms.
- Target serious alarms to a pop-up window, ensuring that users will not perform any Wizcon function before clearing the alarm. This is recommended.
- Group alarms in families.
- Assign an alarm to an object in an image. This object will then change its graphical attributes whenever the alarm conditions are met.
- Assign a Help file to each alarm so the user will know what to do when an alarm begins.

For more information about defining alarms, refer to *Chapter 8, Alarms*. For more information about displaying alarms, refer to *Chapter 9, Events Summaries.*

Step 4: Building the Application Image

The image is a graphical representation of the application process and represents the feedback that the user receives from the plant. The image is the main part of the application that a user views. Therefore, it should be informative, yet easy to understand.

When designing images, take advantage of the following features:

- The Wizcon Image Editor that features many different toolboxes to enable you to build your application.
- Zones, different areas of the image that can be viewed in close up. Each zone can represent a different part of a plant process.
- Layers, that can be compared to transparent sheets with the same coordinates, which lay on top of each other. You can enable group access to certain layers and thereby control sensitive information.

- Cluster libraries, that use object-oriented technology to simplify and speed up application design and maintenance. A cluster is an object with pre-defined behavior patterns which can be linked to existing tags and alarms, or can be used to automatically create new tags and alarms.
- The Wizcon Image Editor that features many different toolboxes to enable you to build your application.

For more details about defining images, refer to *Chapter11, Creating Images and Picture Viewers*, *Chapter 12, Image Editor* and *Chapter 13, Image Animation*.

Step 5: Defining Wizcon Language

Wizcon Language commands are used to make logic calculations that the PLC cannot perform. Wizcon Language is written and implemented according to If, Then conditions. For example:

IF: @FLAG =1

THEN: REPORT “Shift”

Some examples of Wizcon Language commands include:

- Starting and stopping a process.
- Loading a recipe.
- Writing to a tag value based on another tag value.
- Writing to a file or printer.

For more details about defining Wizcon Language commands, refer to *Chapter 16, Wizcon Language*.

Step 6: Testing the Application

At this stage of the design process, it is recommended that you test your application to check your image, alarm, tag and block definitions.

After completing the test and implementing the necessary changes, you can continue to define your reports, charts, recipes and fine tune the application.

Step 7: Defining Charts, Reports and Recipes

Defining Charts

Charts provide graphical views of past and current tag values. You can use charts to follow a trend or compare values. You can define up to 16 tags on a single chart.

When defining a chart, it is possible to:

- Define a unique color to each chart that is also used by the scales of the chart.
- Determine that charts show online or historical activities.

For more details about defining charts, refer to *Chapter 18, Charts*.

Defining Reports

You can define reports for different users such as: operators, engineers, and managers. Make sure that each report includes the required information for the designated user.

Reports can be:

- Triggered in Wizcon Language.
- Written to a file.
- Sent directly to the printer.

When designing reports, it is possible to:

- Place fields in different positions and include any text, such as a header or short explanation at the end of the report. The fields can represent runtime values and a number of calculations performed on the historical tag values, such as averages, integrals, sums and more.
- Choose the range calculation, such as start day, start time, end day and end time.
- Define compound fields that are based on two other fields according to a specific formula. Multiple fields allow you to receive a value based on a group of other fields.

For more details on defining reports, refer to *Chapter 20, Reports*.

Defining Recipes

Recipes are specified sets of tag values that you can store for future use.

When defining recipes, remember that:

- Each recipe must belong to a model which includes tags for certain processes or production modes. The recipe uses the tags in the model to which it belongs, but can also include tags that are not defined in the model.
- Each model and recipe has a unique name.
- The same tag can belong to more than one recipe.
- You can save the current values of any tags at any time as a recipe. This means that at the end of a process, you can save its values as a recipe and reload the recipe when the process is resumed.

For more details about defining recipes, refer to *Chapter 17, Recipes*.

Step 8: Fine-Tuning the Application

Once you have completed these steps, it is recommended to check all your definitions. Use the **Single Tag Value** which is described in *Chapter 7, Tags*, to:

- Invoke Wizcon Language commands.
- Initiate dynamic behavior in an image.
- Invoke reports.
- Check alarms.

Once you are satisfied with the results, fine-tune your entire application, by:

- Adding users to the user groups, as described in the *Operator Access Authorization* section in *Chapter 5, Getting to Know the Application Studio.*
- Saving layouts that can be loaded upon login.
- Setting the menus that will be displayed for the different user groups, as described in the *Operator Access Authorization* section in *Chapter 5, Getting to Know the Application Studio.*

This section describes how to logout of Wizcon and how to exit the system.

Logout

After initiating logout, you will not have access to the system until you login again.

➤ **To logout:**

Click the **Logout** button in the Quick Access bar.

Exiting Wizcon

You can exit Wizcon from the Quick Access bar or from the Wizcon Application Studio.

➤ **To exit Wizcon:**

Click the **Exit** button in the Quick Access bar.

or,

From *File* menu in the Wizcon Application Studio, select **Exit Wizcon**.

Chapter 5
Getting to Know the Application Studio

About this chapter:

This chapter describes the Wizcon Application Studio which is the operational framework of Wizcon for Windows and Internet, as follows:

Overview, page 5-3, describes how to open and exit the Wizcon Application Studio, its structure, and tool bar.

Menu Options, page 5-12, describes the available menu options.

This chapter also describes the following:

Optimizing Application Performance, page 5-15, describes how to use the Station properties to optimize Wizcon performance and enhance functionality.

Application Setup, page 5-22, describes how to set up additional add-ons and programs to run automatically while starting Wizcon.

Defining System Options, page 5-26, describes how to define system options such as, setting WizPro options, changing default file paths and specifying active printers.

Operator Access Authorization, page 5-32, describes how to control local access to the Wizcon system such as registering system operators and assigning names and authorization groups.

MultiLanguage Support, page 5-41, describes how the tag description, alarm text and the text field of an image, developed in one langauge can be translated to another.

Layouts, page 5-47, describes how to save default window layouts.

Using the New Wizcon Application Wizard, page 5-51, describes using the New Wizcon Application Wizard to open applications from the Wizcon Application Studio.

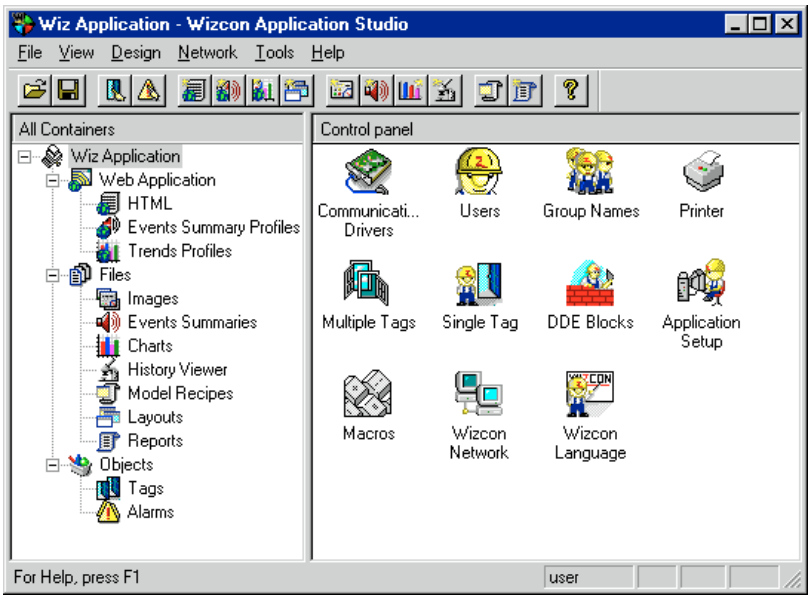
The Wizcon Application Studio is opened from the Quick Access bar, which is displayed when Wizcon is opened. It has an Explorer-like interface which offers full control and access to all parts of the system during application development.

There is no need for the Wizcon Application Studio to be displayed during runtime and a developer can minimize it to obtain an unobstructed view of the plant process. An operator can use the Quick Access Bar for various actions during runtime.

➤ **To open the Wizcon Application Studio:**

1. Click the **Wizcon Application Studio** button in the Quick Access bar. The Wizcon Application Studio is displayed together with the *Tip of the Day* window.

2. You can deselect **Show Tips on Startup** if you do not want to display the *Tip of the Day* window when you next open Wizcon for Windows and Internet, or click **Next Tip** to display another tip.
3. Click **Close** to close the window. The Wizcon Application Studio is displayed as follows:



It is divided into two frames:

- All Containers, on the left, as described on page 5-7.
- Control panel, on the right, as described on page 5-11.

The *Wizcon Application Studio* window also contains:

- A menu bar through which you can access Wizcon for Windows and Internet operational menus, which is described in more detail on page 5-12.
- A toolbar that enables quick access to the Wizcon Application Studio most frequently used functions, as described below:

Click	To do
	Open an image, as described in *Chapter 12, Image Editor*.
	Save the current application.
	Define a tag, as described in *Chapter 7, Tags*.
	Add alarm definition, as described in *Chapter 8, Alarms*.
	Generate a new HTML file, as described in *Chapter 15, Generating HTML Pages*.
	Create an Events Summary Profile, as described in *Chapter 10, Creating Events Summary Profiles*.
	Create a Trend Viewer, as described in *Chapter 14, Creating Trend Viewers*.
	Create an image, as described in *Chapter 12, Image Editor*.
	Create a new Events Summary, as described in *Chapter 10, Creating Events Summary Profiles*.
	Create a chart, as described in *Chapter 18, Charts*.
	Create a History Viewer, as described in *Chapter 19, History Viewers*.

Click	To do
	Create a new recipe model, as described in *Chapter 17, Recipes*.
	Define a layout, as described on page 5-47.
	Create a report, as described in *Chapter 20, Reports*.
	Display Wizcon version information.

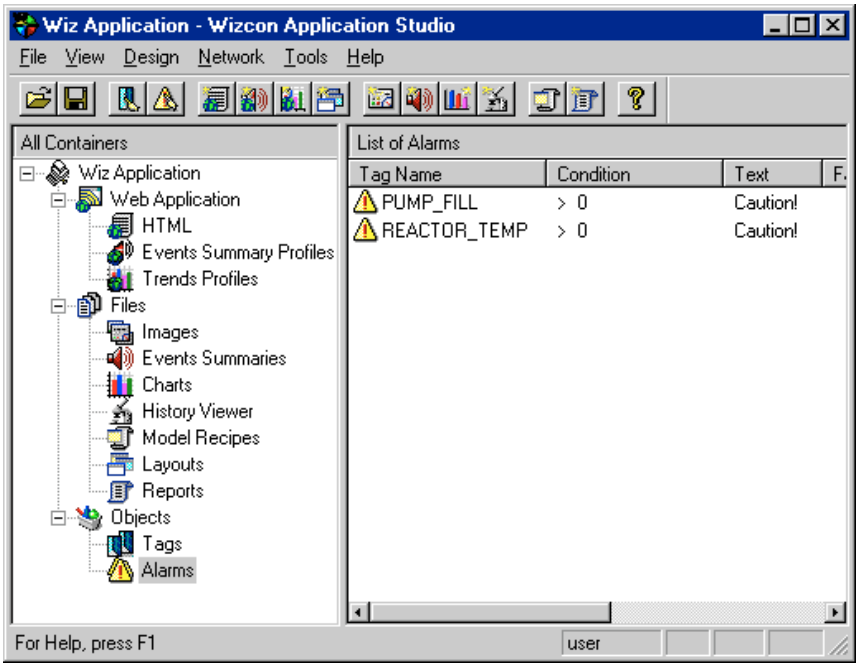
All Containers Section

The All Containers panel displays a hierarchical structure, or tree, of the *containers* from which you build a Wizcon application. Containers can be thought of as the building blocks of a Wizcon application. The tree is made up of three main folders of containers with the current application as its root.

- **Web Application**, contains the elements that are used to publish an application, such as HTML pages for the Image and the Events Summary Profile, and the Trend Profiles.
- **Files**, contains the Wizcon elements that are stored as files, such as: Images, Events Summaries, Charts, History Viewer, Model Recipes, Layouts and Reports.
- **Objects**, contains the elements that are stored as objects, such as: Tags and Alarms.

Clicking the right-mouse button on any of the containers opens a popup menu that displays related options. For example, right-clicking on **Alarms** displays a popup menu with the following options: **Add Alarm**, **Import Alarms**, **Export Alarms** and **Properties**.

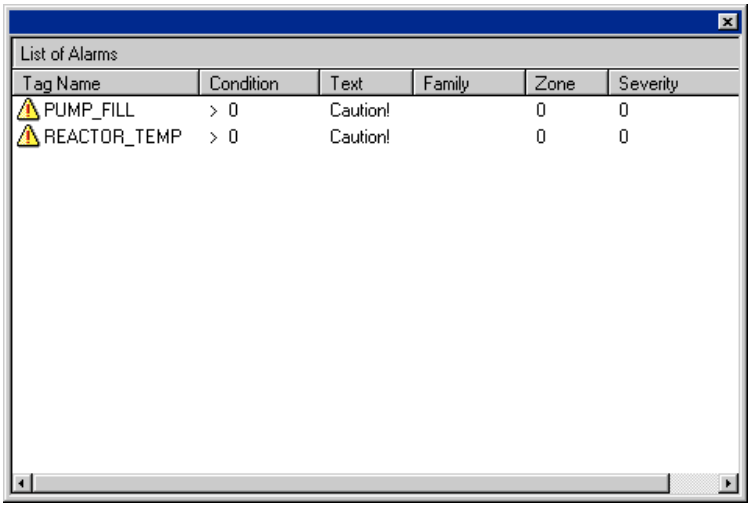
When a container is selected in the All Containers section on the left, a list of its contents is displayed in the List Zone on the right. For example when **Alarms** is selected in the **All Containers** list, a list of all the alarms in the application is displayed in the **List of Alarms**, as shown below.



All lists, for example the **List of Alarms** shown above, share the following common features:

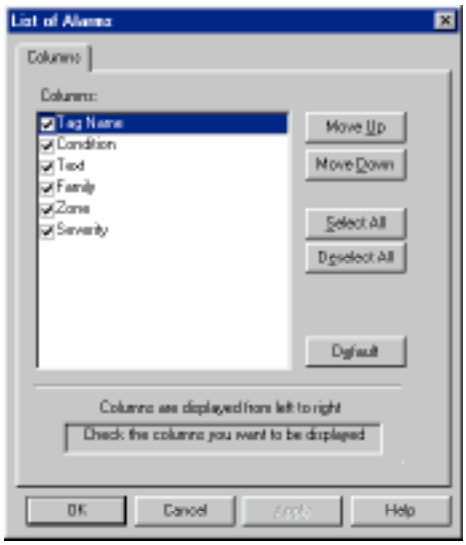
- Right-clicking anywhere in the list displays a popup menu with context sensitive options.
- Clicking on a column header sorts the list in that column. The information for each list is displayed under columns that are relevant to the list. For example, the **List of Alarms** displays the following columns: Tag Name, Condition, Text, Family, Zone and Severity.

- A list can be duplicated in a separate window for ease of use by right-clicking in the list window, pointing to **View** and selecting **Duplicate** from the popup menu. A list can be duplicated only once. For example, the **List of Alarms** as shown below:



- A list can be customized by right-clicking in the list window, pointing to **View** and selecting **Settings** from the popup menu. A dialog is displayed in which you can set the order and the type of fields to be displayed in the List Zone.

For example, the *List of Alarms* dialog, as shown below:



To specify the columns to be displayed in the **List of Alarms**, click the checkbox next to a column name to select it. The following columns are available:

Tag Name
Condition
Text
Family
Zone
Severity

You can determine the order in which the columns appear in the Wizcon Application Studio by selecting a column and activating the **Move Up** or **Move Down** buttons.

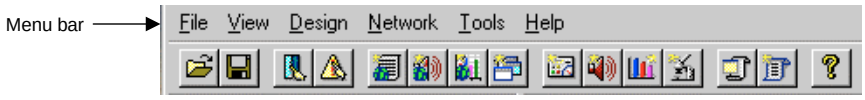
You can select all the columns by activating the **Select All** button, and deselect them by activating the **Deselect All** button. Clicking the **Default** button selects all the columns.

The Control Panel

The Control panel, on the right of the Wizcon Application Studio, is displayed when the root of the tree (the current application) is selected. For example, on page 5-4, the application called **wizapplication** (the default name Wizcon for Windows and Internet gives to new applications) is selected and the Control panel is displayed. The Control panel displays icons that represent the following elements of Wizcon for Windows and Internet.

Click	To do
	Define communication drivers, as described in *Chapter 6, Communication Drivers*.
	Define users, as described on page 5-34.
	Define group names, as described on page 5-37.
	Define printer settings, as described on page 5-30.
	Define multiple tags, as described in *Chapter 25, Multiple Tags*.
	Define a single tag, as described in *Chapter 7, Tags*.
	Define DDE blocks, as described in *Chapter 22, Wizcon DDE Support*.
	Define application setup, as described on page 5-22.
	Define macros, as described in *Chapter 21, Macros*.
	Set a network environment, as described in *Chapter 23, Wizcon Network*.
	Define Wizcon Language, as described in *Chapter 16, Wizcon Language*.

Menu Options



The following menu options are available in the Wizcon Application Studio.

Menu	Select	To do
File	**New**	Open a new HTML file, Events Summary Profile, Trend Profile, Layout Capture, Image, Events Summary, Chart, History Viewer, Recipe Model and Report.
	Open	Opens an existing Image.
	New Application	Display the New Application wizard in which you can open a application, as described on page 5-51.
	Open Application	Open an existing application, as described on page 5-54.
	Save	Save the current project.
	Save As…	Save the current project with a specific name and location.
	Exit Wizcon	Exit Wizcon for Windows and Internet.
View	**Tool bar**	Display (or hide) the toolbar.
	Status bar	Display (or hide) the status bar.
	Disable non-Web Features	Disable non-Web features in the Image.
	Window System Menu	Display (or hide) the icon in the top left corner of the image window. This overwrites the **System menu** property of the image window attribute, as described in *Chapter 12, Image Editor*.

Menu	Select	To do
Design	**Add Object**	Add a new tag, as described in *Chapter 7, Tags*, or add a new alarm, as described in *Chapter 8, Alarms*.
	Communication Drivers…	View the drivers defined for the application, add a new driver, remove a driver, and define driver properties, as described in *Chapter 6, Communication Drivers*.
	Macros	Define macros, as described in *Chapter 21, Macros*.
	DDE Blocks…	View the DDE blocks defined for the application, add a new block, delete a block and define block properties, as described in *Chapter 22, Wizcon DDE Support.*
	Application Setup…	Set up additional add-ons and programs to run while starting Wizcon, as described on page 5-25.
	PopUp Settings	Design a Popup Events Summary which appears on the screen to inform the operator of severe alarms, as described in *Chapter 9, Events Summaries*. Popup Events Summaries are allocated to an alarm during alarm definition, as described in *Chapter 8, Alarms*.
	Class Names…	Assign class names to alarms, as described in *Chapter 8, Alarms*.
	Wizcon Language	Define Wizcon language procedures, as described in *Chapter 16, Wizcon Language*.
	Options…	Configure application options such as WizPro, Paths and Printers, as described on page 5-24.
	Authorization	Configure operator access authorization, as described on page 5-34.

Menu	Select	To do
Network	**Local Station Configuration…**	Configure your computer as a SCADA or SCADA View station, a Hot Backup Station, or a Management View Station, as described in *Chapter 23, Wizcon Network.*
	Record Remote Data…	Record remote tags and alarms, and simulate the connection between a remote station that is not running, as described in *Chapter 23, Wizcon Network.*
	Network Properties…	Set your network environment and establish a proper Wizcon application performance, as described in *Chapter 23, Wizcon Network.*
Tools	**Single Tag…**	Assign an immediate value to a tag. This is useful for testing tag performance, as described in *Chapter 7, Tags*.
	Multiple Tags…	Define multiple tags to optimize performance, as described in *Chapter 25, Multiple Tags*.
	Import	Import a list of tags, as described in *Chapter 7, Tags,* or a list of alarms, as described in *Chapter 8, Alarms.*
	Export	Export a list of tags, as described in *Chapter 7, Tags,* or a list of alarms, as described in *Chapter 8, Alarms.*
	MultiLanguage Support	Define Language Support, as described on page 5-41.
Help	**Help Topics**	Display Help topics
	Tip of the Day…	Display the *Tip of the Day* dialog.
	About studio…	Display information about the Wizcon Application Studio.

Wizcon Station properties enable you to optimize application performance and enhance functionality. You can adjust system parameters and establish a suitable working environment for your Wizcon Application.

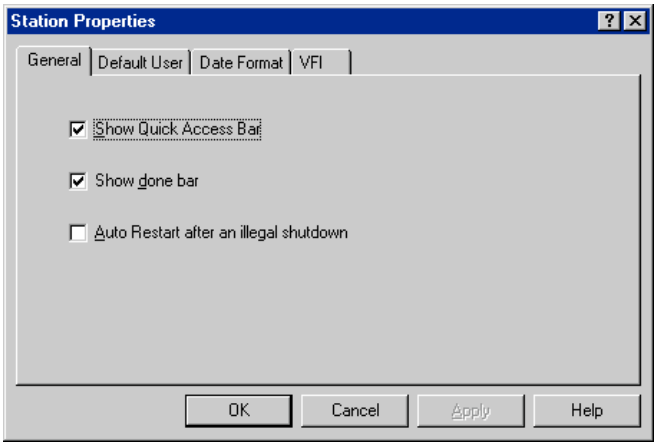
➤ **To define station properties:**

Right-click **Wiz Application** in the root of the container list in the All Containers section (if you have saved your application, the application name will appear in the root), and select **Station Properties**. The *Station properties* dialog is displayed, as shown on the following page, in which you can:

- Customize the application workplace, in the **General** tab, as described on the following page.
- Select a default user that will be logged in when you start Wizcon, in the **Default User** tab, described on page 5-17.
- Set the date format, in the **Date Format** tab, as described on page 5-18.
- Set the format for history files by selecting Virtual File Interface DLLs, in the **VFI** tab, as described on page 5-20.

Setting General Station Parameters

The application workplace can be customized in the **General** tab of the *Station Properties* dialog.



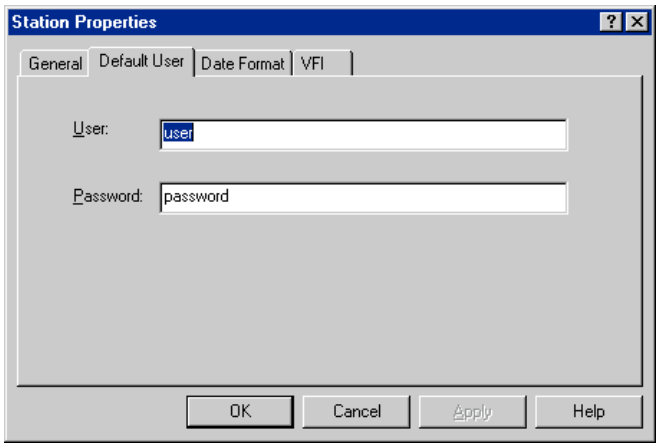
The following options are available:

Show Quick Access Bar	Determines whether or not the Quick Access bar appears when Wizcon is loaded.
Show done bar	Displays a background processing dialog when large tasks such as loading a large image are being executed. Changes are implemented online.
Auto Restart after an illegal shutdown	Specifies if Wizcon automatically recovers its last state. For example, after a power failure. Changes are implemented online.

Selecting a Default User

You can specify the name of the user you want automatically logged in whenever you start Wizcon in the **Default User** tab of the *Station Properties* dialog. This is enabled after defining a user name and password, as described in more detail on page 5-32.

Note that you only log on to the system when using Wizcon locally.



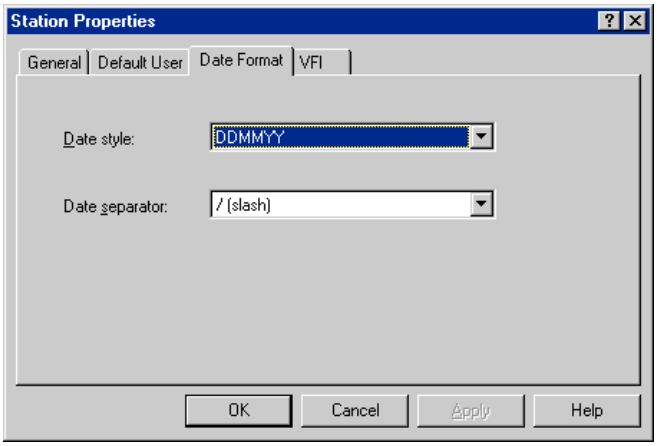
The following options are available:

User — Specifies the User's name. Enter an asterisk (*) to specify the last user that logged out. Changes are implemented online.

Password — Specifies a password. Restart Wizcon for changes to take effect.

Setting the Date Format

You can set the date style and date separator in the **Date Format** tab of the *Station Properties* dialog.



The following options are available:

Date style — Specifies a date style from a list of predefined date styles. Listed below are the Date styles:
DDMMYY
MMDDYY
YYMMDD
DDMMYYYY
MMDDYYYY
YYYYMMDD

Date separator — Specifies a date separator from a predefined list of date separator styles. The Date separator files are:
/ (slash)
. (dot)
(dash)

➤ **To Set Date Format**

1. In the Stations Properties dialog select the **Date Format** tab. The Date Format Dialog opens.
2. From the Date Style list select a predefined date style.
3. From the Date Separator list select the way you want the date to be separated.
4. Press OK key to enter your selection.

When loading for the first time, Wizcon for Window and Internet sets default values for these parameters using country code, defined in Control Panel ⇨Regional Settings.

The table below lists the default values in Wizcon for different countries.

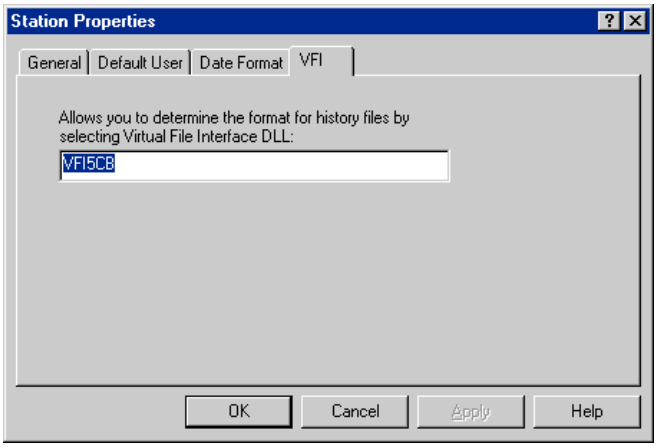
Country	Date Style	Date Separator
USA	MMDDYY	/ (slash)
Japan	YYMMDD	/ (slash)
Netherlands	DDMMYY	/ (dash)
Denmark	DDMMYY	/ (dash)
Germany	DDMMYY	. (dot)
Austria	DDMMYY	. (dot)
Russia	DDMMYY	. (dot)
All others	DDMMYY	/ (slash)

Setting a Format for History Files

The format for history files is set in the **VFI** tab of the *Station Properties* dialog.

VFI enables the designer to select different file formats to be used by WizPro for historical data logging and report generation. The system engineer can use a combination of different file systems and databases with the application for data manipulation convenience and optimum performance.

VFI uses a unique driver for each database, thereby taking advantage of the database's structure and characteristics. PC Soft supplies drivers to support specific databases.



The following options are available:

- **VFI5CB**, that enables writing/reading tag and alarm historical files in FoxPro format. This format is readable by most database programs. This is the default option and can be used for both tag and alarm history files.

Note: Restart Wizcon for changes to take affect.

VFI FAST Mode (VFI5FST)

VFI Fast mode addresses the following issues:

- Record of values with 'old' time stamps. This enables the Backup to complete data to the Master. All values can be read, and displayed in a Chart. In order to enable this option, you should set the following environment parameter.

  VFI5FST_MODE_TIMESTAMP=YES

  This parameter should be set in the Master only. It can also be set in the Backup, but from performance point of view it is better to set it only in the Master.

  Note: Using this option effects the performance of the Fast VFI, which will be less than optimum, the more scattered recording that is done (more values written not in order of time).

- Concurrent writing of history from more than one clients.

  Note that a gap in logging data exists between the time Master is up, and the Backup starts updating it, until the Master logger starts working. This gap is between 20 sec to 2 min depending on the overall load of the system.

  Updating from the Backup to the Master may take a few minutes (if it logged a few Mb while it was active). This updating is done while the Master is already active and sampling or logging the current process.

Menu ⇨ Design / Application Setup

The *Application Setup* dialog enables you to set up or modify the additional add-ons and programs you wish to run when starting Wizcon. This section describes the following:

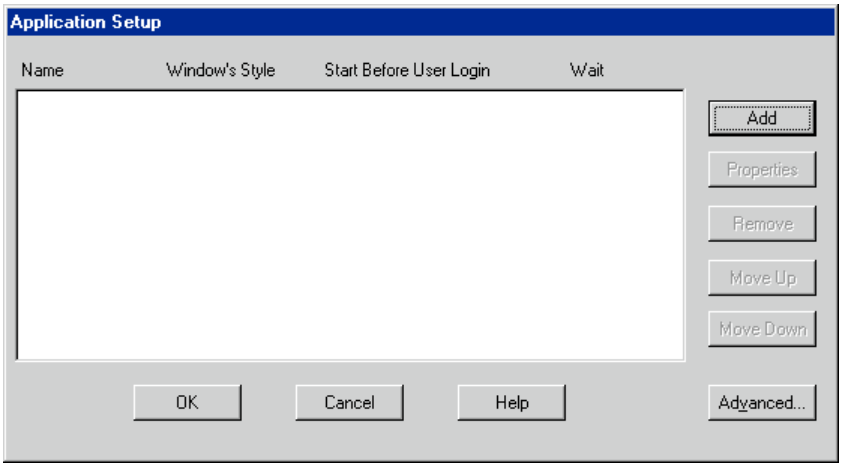
- Opening the application setup dialog, as described below.
- Setting up the program you wish to run while starting Wizcon, as described on page 5-24.
- Selecting a setting environment for a Wizcon application, as described on page 5-25.

➤ **To open the Application Setup dialog:**

In the Control panel of the Wizcon Application Studio, double-click the **Application Setup** icon.

Or,

From the *Design* menu, select **Application Setup**. The *Application Setup* dialog is displayed.



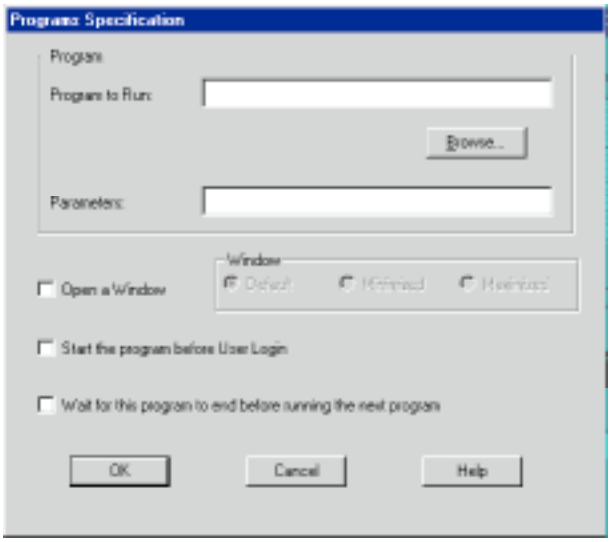
The following options are available:

Add	Sets up the additional program you wish to run while starting Wizcon. For more details, refer to the following page.
Properties	Displays the properties of the selected program.
Remove	Removes the selected program from the list of programs.
Move Up	Moves a program up one line in the list of programs.
Move Down	Moves a program down one line in the list of programs.
Advanced	Determines a setting environment for a Wizcon application. For more details refer to page 5-25.

Note: When adding a list of programs, write the list in the order that you want them to run. Do not place a program that should run before the Wizcon interface, following a program that should run after the Wizcon interface.

➤ **To setup a program you wish to run while starting:**

Activate the **Add** button in the *Application Setup* dialog, as shown on page 5-22. The *Programs Specification* dialog is displayed:



The following options are available:

Program to Run — Specifies the full path of the program. Click the **Browse** button to access the DDE server and client settings (Bin/WizDDEs/c.exe).

Parameters — Specifies the program parameters, if there are any.

Open a Window — Opens the program in a window. The following window styles are available:

Default: Opens the window in a default size.

Minimize: Opens the window minimized.

Maximize: Opens the window maximized.

Start the Program before User Login

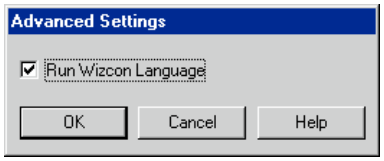
Specifies whether to run the user program before or after user login.

Wait for the program to end before running the next program

Specifies whether to wait until the current program will end before running the next program.

➤ **To select the setting environment for a Wizcon application:**

Activate the **Advanced** button in the *Application Setup* dialog, as shown on page 5-22. The *Advanced Settings* dialog is displayed:



The following options are available:

Run Wizcon Language Specifies that the default Wizcon Language is run.

Menu ⇨ Design / Options

This section describes how to:

- Define WizPro options, as described below.
- Change the default Wizcon file paths, as described on page 5-29.
- Specify active printers, as described on page 5-30.

Note: Changes to WizPro Paths and Printers options are implemented online.

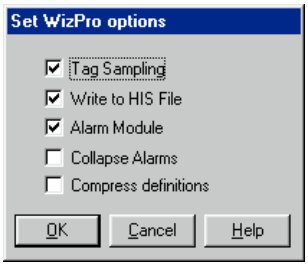
WizPro Options

Menu ⇨ Design / Options / WizPro

WizPro is the Wizcon programming interface kernel. It provides mechanisms through which PLC and external device communication can be implemented, maintains an on-line database, and services all inter-process requests and messages.

➤ **To set WizPro options:**

From the *Design* menu, point to **Options** and select **WizPro** from the popup menu. The *Set WizPro options* dialog is displayed:



The following options are available:

Tag Sampling — Enables the WizPro tag sampling mechanism. Tags are sampled according to the rate defined for the tag in the *Analog Tag Definition* dialog or the *Digital Tag Definition* dialog, as described in the *Defining Tags* section in *Chapter 7, Tags*. Tag sampling will not occur if this option is deselected.

Write to HIS File — Enables the recording mechanism to record sampled tags in historical files. Historical sampling will not occur if this option is deselected.

Alarm Module — Enables WizPro to check if alarm conditions are true whenever tag values change.

Collapse Alarms — Enables WizPro to collapse alarms in the Events Summary. This means that repeated identical alarms will be displayed on a single line in the Events Summary. If this option is not selected, each alarm will be displayed on a separate line until the condition defined for the alarm ceases to exist.

Compress definitions — Physically removes all deleted tags and alarms from the Wizcon database and renumbers their ID numbers. When tags or alarms are removed from Wizcon, they are not physically deleted, but only marked as deleted so as not to affect the internal ID numbers of the remaining tags and alarms. Enable this option in applications where it is necessary for tags and alarms to have sequential ID numbers.

Things to remember:

- If the ID number of tags or alarms is changed, the data in the history files may not be processed. Therefore, it is strongly recommended that you keep a backup of the tag definition files (WIZGATES.DBF, WIZGATES.CDX) before deleting any tags from the database.
- If the ID number of tags is changed, you need to save the Wizcon Language commands again in the Wizcon Language Definition dialog, as described in *Chapter 16, Wizcon Language.* This is necessary so that the commands will correspond to the new, internal tag IDs.
- Deleted tags count as defined tags when Wizcon checks if the number of defined tags is less than the amount allowed by the security key.

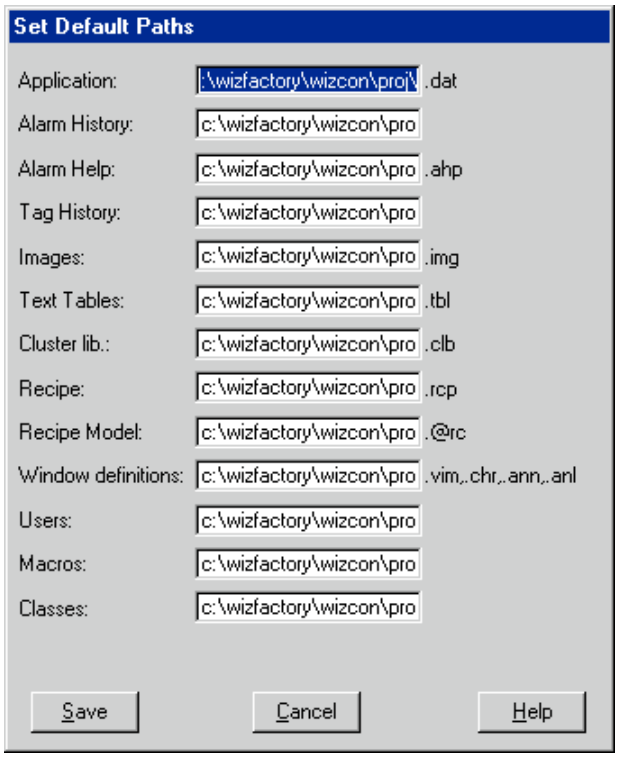
Changing Default File Paths

Menu ⇨ Design / Options / Paths

Default paths can be defined for each file type to enable the system to keep track of files and their locations.

➤ **To define file paths:**

From the *Design* menu, point to **Options** and select **Paths** from the popup menu. The *Set Default Paths* dialog is displayed:



The dialog displays the following Wizcon file types with their current path specifications:

Application	C:\Wizfactory\Wizcon\Project\
Alarm History	C:\Wizfactory\Wizcon\Project\

Alarm Help	C:\Wizfactory\Wizcon\Project\
Tag History	C:\Wizfactory\Wizcon\Project\
Images	C:\Wizfactory\Wizcon\Project\
Text Tables	C:\Wizfactory\Wizcon\Project\
Cluster lib	C:\Wizfactory\Wizcon\Project\Image\
Recipe	C:\Wizfactory\Wizcon\Project\
Recipe Model	C:\Wizfactory\Wizcon\Project\
Window definitions	C:\Wizfactory\Wizcon\Project\
Users	C:\Wizfactory\Wizcon\Project\
Macros	C:\Wizfactory\Wizcon\Project\
Classes	C:\Wizfactory\Wizcon\Project\

- To change the path of a specific file type:

  Click in the line that you want to change and specify the new path.

  A path must be specified with a terminating backslash (\).

Note: Restart Wizcon for changes to take effect.

Specifying Active Printers

Menu ⇨ Design / Options / Printers

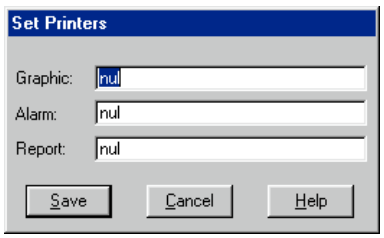
The different types of files generated by Wizcon for alarms, reports, screen contents and so on, may be sent to different types of printers. To use several printers, the operator must first specify which printers are active.

➤ **To specify active printers:**

In the Control panel of the Wizcon Application Studio, double-click the **Printer** icon.

Or,

From the *Design* menu, point to **Options** and select **Printers** from the popup menu. The *Set Printers* dialog is displayed:



The following options are available:

Graphic Specifies the printer from which the system will print Images.

Alarm Specifies the printer from which the system will print alarms.

Report Specifies the printer from which the system will print reports.

Specify the name of the printer in each field. The same printer can be used for one, two or all of the output types.

The printer name can be the name of the printer itself (such as \\server\hplaserjet) or its physical port name (such as LPT1). If you wish to use LPT1 (or any other port), make sure that you set the port capture correctly. If no printer is to be used, enter **NUL** into the appropriate field.

Remember that the graphics printer should have the proper graphic capabilities.

In Wizcon, operator access to tags can be limited to professional level and skill. This powerful feature enables the system engineer to control access to the Wizcon system.

The components to which access can be limited include:

- Menus and menu items
- Tag value writing
- Macro activation
- Graphic element layers in images

System authorization is assigned by *Groups*. Up to 32 groups can be defined in the system, each with its own unique name. Each operator can be assigned to one or more groups. For example, once a group is assigned to a tag, any operator that belongs to that group can perform tag value operations on that tag. Operators not assigned to a group that matches any of the tag groups, will not be able to set new tag values.

System authorization is for local use only. Group names and passwords are not used when interacting with the application through a browser.

➤ **To define operator authorization settings:**

Select the *Design* menu and point to **Authorization**. A popup menu displays the following options:

Select	To do
User Setup	Setup users using passwords and group assignments, as described on page 5-37.
Group Names	Assign names to authorization groups, as described on page 5-37.
Menu Items	Assign an authorization group to each menu item in Wizcon, as described on page 5-38.

This section describes how to:

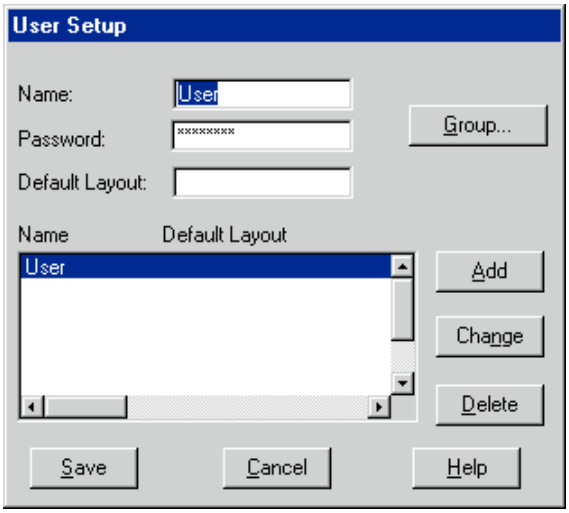
- Define users with passwords and group assignments, as described below.
- Assign group names to authorization groups, on page 5-37.

Operator Registration

The **User Setup** option defines users with passwords and group assignments. The name of the currently logged-in operator is displayed in the title bar of the Quick Access bar.

➤ **To register system operators:**

In the Control panel of the Wizcon Application Studio, double-click the **Users** icon. The *User Setup* dialog is displayed:



The following options are available:

Name	Specifies the operator name.
Password	Specifies the operator password. The password is displayed as asterisks (****) when a user types a password and when a User entry is selected from the list. Therefore, there is no need to retype password each time when changing user definition as Groups or default layout.
Default Layout	Specifies the default window layout that appears whenever an operator logs in. If you do not want a specific layout to be loaded upon operator login, leave this field empty.

- To add a new operator to the list:

  Fill in the **Name**, **Password** and (if required) the **Default Layout** field, and activate the **Add** button.

- To modify existing operator definitions:

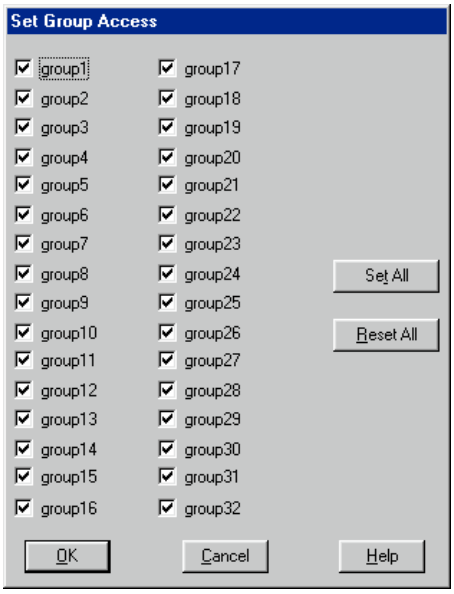
  Select an operator from the list, make the required changes to the **Name**, **Password** and **Default Layout** fields, and activate the **Change** button.

- To delete an operator from the Operator List:

  Select an operator and activate the **Delete** button.

- To assign groups to an operator (or to modify the group assignment of an existing operator):

  Activate the **Group** button. The *Set Group Access* dialog is displayed in which you can select a group to assign to the operator.



  Activating the **Set All** button assigns all the groups to the operator.

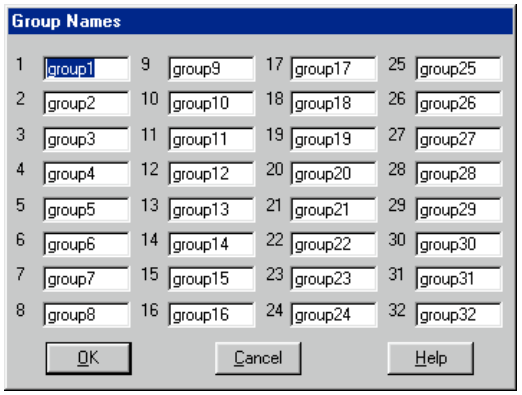
  Activating the **Reset All** button resets all the groups assigned to the operator to their original settings.

Assigning Group Names

The **Group Names** option is used to assign names to authorization groups. The default set of names appears as **Group***nn*, where *nn* stands for a group number from 1 to 32.

➤ **To assign names to authorization groups:**

In the Control Panel of the Wizcon Application Studio, double-click the **Group Names** icon. The Group Names dialog is displayed:



Any group name can be edited. The names will be used later for authorization purposes.

Menu Access Authorization

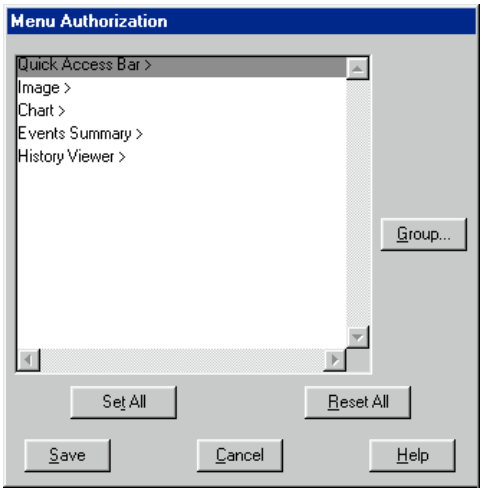
Menu ⇨ Design / Authorization / Menu Items

Each menu item in the Wizcon system can be assigned authorization groups, whereby only operators belonging to those groups will have access to the items.

For example, if an operator belongs to the groups called MANAGER, SYSTEM, and USERS, and a menu item is assigned the groups TECH, SYSTEM, and ENGIN, that item will be accessible to the operator (since both have a common group).

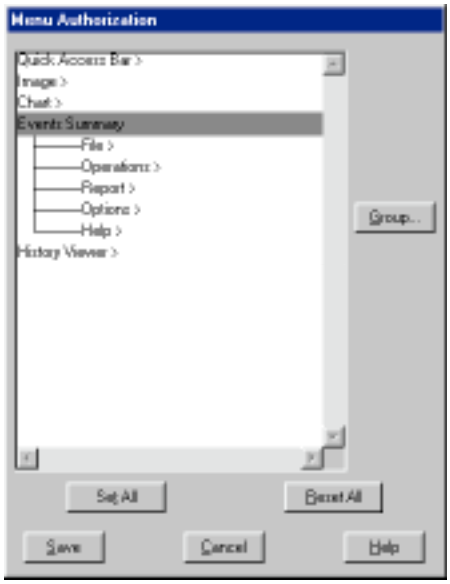
➤ **To assign menu item authorization:**

From the *Design* menu, point to **Authorization** and select **Menu Items** from the popup menu. The *Menu Authorization* dialog is displayed:



This dialog contains a list of the Wizcon windows such as: **Image**, **Chart**, **Events Summary**, **History Viewer**, and the **Quick Access bar**.

The menus of these items are displayed in a tree arrangement. Menu branches are expanded and contracted by double-clicking on them. An item that includes sub-items is indicated by an arrow (>). When you double-click on such an item, the sub-item list appears. For example, double-clicking on **Events Summary** displays the following sub-item list:



Double-click on **Events Summary** to close the sub-item list.

- To assign all the authorization groups to an item:

  Activate the **Set All** button.

- To reset all the groups assigned to an item to their original settings:

  Activate the **Reset All** button.

- To assign specific groups to an item:

Select the item and activate the **Group** button. The *Set Group Access* dialog is displayed, as shown on page 5-36, in which you can select groups to be assigned to the menu item. Only operators assigned to these groups will have access to the menu item.

Activating the **Set All** button assigns all the groups to the item.

Activating the **Reset All** button resets all the groups assigned to the item to their original settings.

If you assign groups to menus that include sub-menus and sub-items, all the sub-menus and sub-items are affected. However, if you assign groups to a sub-menu or sub-item, the parent menu is not affected.

When you select a sub-menu or sub-item that belongs to that menu, you can only reset and set the groups that were defined for the parent menu, unless you return to the parent menu and change the settings.

Menu ⇨ WizTools / MultiLanguage Support

Using MultiLanguage support, the tag description, alarm text and the text field in an image can be developed in one language and translated to another. During runtime, a user can then choose the required language.

Support for different languages is dependent on the operating system and its support for that language. Far Eastern languages, such as Japanese, are supported in Wizcon only in their native operating system. Latin languages are supported in any operating system.

All texts for specific languages are kept in files. The size of this file is proportional to the size of the application. For small applications, this can take as much as 10 kbyte. A larger application can take as much as several mbytes.

Strings

If you have a multilanguage application with strings in two or more languages, it is possible that not all the strings will be present in all languages after importing. If a string is absent in a selected language, the missing string will appear on the screen in the following format:

<??string ID?>

Where the string ID is a number, such as <??0000000005?>.

Defining MultiLanguage Support

This section describes how to define multilanguage support in an application. The following steps need to be repeated for each language used.

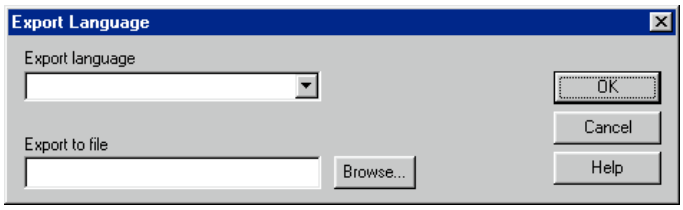
- Exporting the language strings into a file.
- Selecting the language in which the application was written and importing the file into the application.
- Opening the file with a text editor, translating the language strings into the required language and saving the file with a new name.
- Selecting the required language and importing the translated file into the application.

After you have defined multilanguage support for a language, you can then select it to determine that the application texts will appear in that language, as described on page 5-45.

➤ **To define/modify multilanguage support:**

- To export a file:

1. From the *WizTools* menu, point to **MultiLanguage Support** and select **Export Language** from the popup menu. The *Export Language* dialog is displayed:



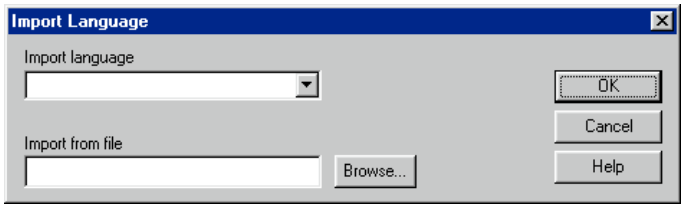
2. In the **Export to file** field, enter the name of the text file you wish to create for the language strings.

3. Click **OK** to save your definitions and close the dialog. It is recommended to save the file in the same directory as your application.

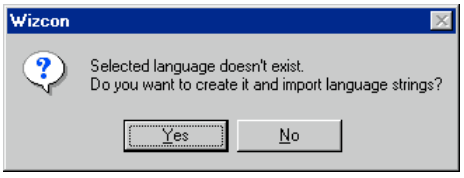
Note: If multilanguage support has already been defined in your application, the last language you imported will appear in the Export language field.

■ To import the text file:

1. From the *WizTools* menu, point to **MultiLanguage Support** and select **Import Language** from the popup menu. The *Import Language* dialog is displayed:



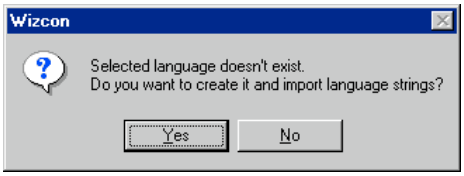
2. Click in the **Import Language** field to display a list of available languages. Select the language in which the application was written.
3. In the **Import from file** field, enter the name of the text file that contains the language string (this is the file you created in the **Export to file** field in the *Export Language* dialog, on the previous page), or click **Browse** to locate the file.
4. Click **OK** to import the file. The following message appears:



5. Click **Yes** to establish a link between the language and its file.

- To translate the file:

  1. Open the language file using any text editor.
  2. Translate the language strings into the required language and save the file as a new file.
  3. Access the Explorer and remove the extension (.txt) from the file.
  4. Follow step 1 on the previous page to open the *Import Language* dialog and enter the required language in the **Import language** field.
  5. In the **Import from file** field, enter the name of the file that contains the translated language strings, or click **Browse** and locate the file.
  6. Click **OK** to import the file. The following message is displayed:



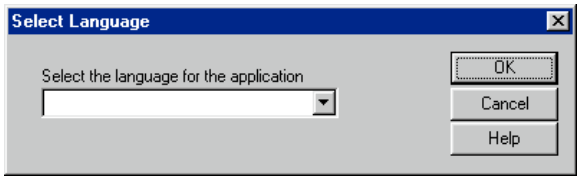
  7. Click **Yes.** The language is now supported.

Selecting a Language

After you have defined multilanguage support, you can select the language in which you want Wizcon to display the application texts.

➤ **To set a language:**

1. From the *WizTools* menu, point to **MultiLanguage Support** and select **Select Language** from the popup menu. The *Select Language* dialog is displayed:



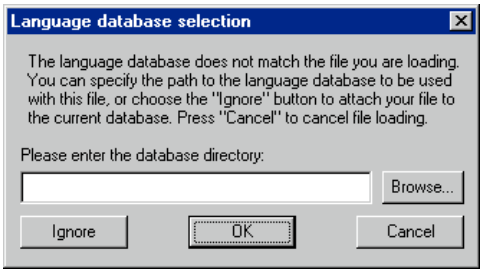
2. Click in the **Select the language for the application** field, and select the required language from the list of supported languages.
3. Click **OK** to save your definitions and close the dialog. The language strings are now displayed in the selected language.

Note: The language strings are displayed in another language only after refreshing the required container in the All Containers section. For example, to display the alarms language strings in the selected language, click the + sign to the left of Objects. The objects list collapses and the + changes to a -. Click the - sign to expand the objects list and then click Alarms to display the List of Alarms. The alarm text is displayed in the Text column of the List of Alarms in the selected language.

Loading Wizcon Files Created in Another Wizcon Application

If you try to load (import) an image, or the wizgates.dat and alerts.dat file created in another application, the multilanguage support module may detect that the file was not created in the current application. The following may occur:

- If a language has not been defined for the application, the application will work with the default language. The multilanguage support module will attach the loaded file to the current application.
- If the current application is a multilanguage application with two or more defined application languages, the *Language database selection* dialog is displayed:


Language database selection
The language database does not match the file you are loading. You can specify the path to the language database to be used with this file, or choose the "Ignore" button to attach your file to the current database. Press "Cancel" to cancel file loading.
Please enter the database directory:
Browse...
Ignore
OK
Cancel

  Click **Browse**, to specify the path of the language database to be used with this file.

If the selected database does not match the loaded file, the *Language Database Selection* dialog will reappear. You can either click **Ignore** to attach the loaded file to the current language database, or click **Cancel** to prevent file loading.

Layouts

A *layout* is the position of open windows in an application. This section describes how to capture and save layouts and how to assign them to users.

You can assign a layout to a user, so that when the user logs on, the windows included in the layout will automatically be displayed in the position in which they were saved.

You can also close all the open windows in your application, as described below.

Capturing layouts, assigning them to users and user log on is for local use only. Layouts are not used when interacting with the application through a browser.

Capturing and Saving Layouts

You can open Image, Events Summaries, History Viewers and Chart windows, position them on your screen and save their position.

➤ **To save a layout:**

In the All Containers section of the Wizcon Application Section, right click **Layouts** and select **Capture Layout** from the popup menu. A standard *Save As* dialog is displayed in which you can save the layout. The layout is displayed in the List of Layouts.

- To add additional window positions to an existing layout:

  Specifying the existing layout file name in the *Save As* dialog.

- To load a layout:

  In the List of Layouts in the Wizcon Application Studio, right-click the required layout and select **Load Layout** from the popup menu.

- To delete a layout:

  In the List of Layouts in the Wizcon Application Studio, right-click the layout you want to delete and select **Delete Layout** from the popup menu.

Assigning Layouts to Users

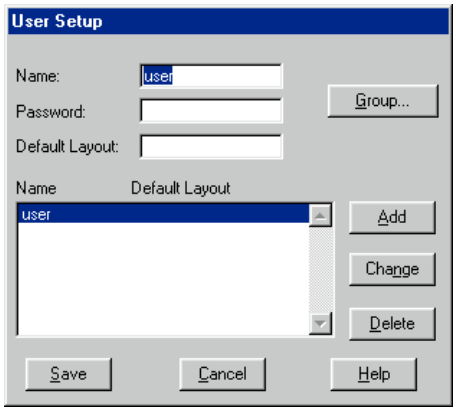
When you have captured and saved a layout, you can assign it to a user, so that when the user logs in, the layout is automatically displayed on the screen.

➤ **To assign a layout to a user:**

1. In the Control Panel of the Wizcon Application Studio, double-click the **Users** icon.

   Or,

   From the *Design* menu of the Wizcon Application Studio, point to **Authorization** and select **Users** from the popup menu. The *User Setup* dialog is displayed:

2. In the **Name** field, specify a user name.

3. In the **Password** field, specify a password.
4. In the **Default Layout** field, specify the previously defined layout you want to assign to the user.
5. Click **Add** to add the user and the layout to the list.
6. Click **Save** to save your definitions and close the dialog.

You can logout and login using the defined user name and password, and see how the layout is automatically loaded.

Loading a Layout

You can load any layout you choose.

➤ **To load a layout:**

In the List of Layouts in the Wizcon Application Studio, right-click the required layout and select **Load Layout** from the popup menu.

Closing all Open Windows

You can use the **Close All windows** feature to close all the windows open in your application.

➤ **To close all windows:**

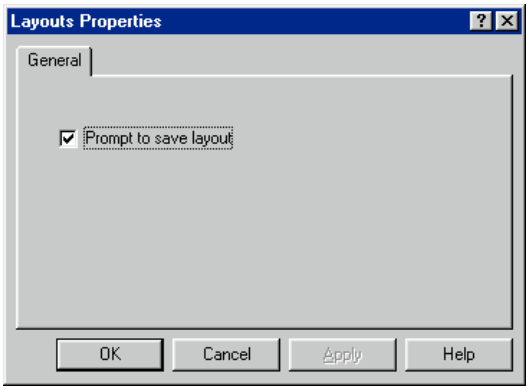
In the All Containers section of the Wizcon Application Section, right click **Layouts** and select **Close All windows** from the popup menu.

Saving Layouts (by Default)

You can configure the layout property so that you are prompted to save the layout of any open windows before you exit Wizcon.

➤ **To save a layout by default:**

1. Right-click **Layouts** and select **Properties** from the popup menu. The *Layouts Properties* dialog is displayed:



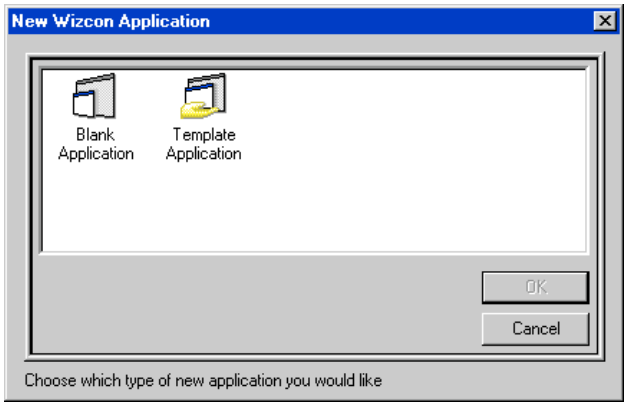
2. Select **Prompt to save layout**. When you exit Wizcon you are prompted to save the current layout. This change can be implemented online.

Wizcon for Windows and Internet provides the New Wizcon Application wizard to enable you to open applications from the Wizcon Application Studio. You can:

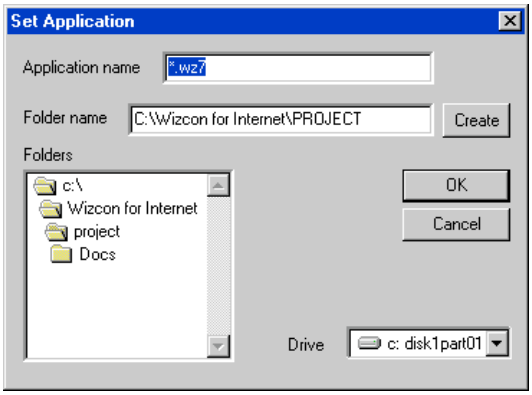
- Open a blank application. Wizcon will base the application on the default Wizcon settings.
- Create a template application. Wizcon will open a new application based on the settings of an existing application.
- Open an existing application.

➤ **To open a blank template:**

1. From the *File* menu, choose **New Application**. The *New Wizcon Application* dialog is displayed:



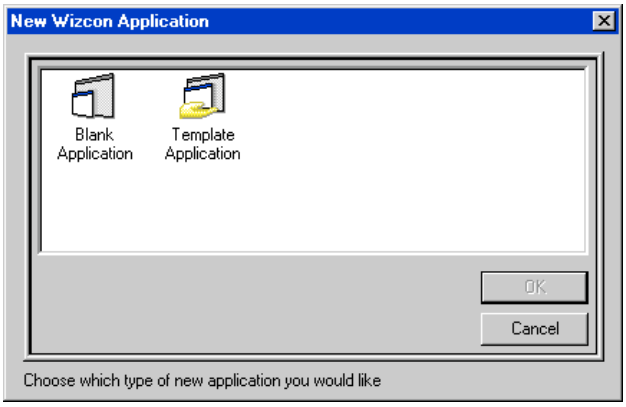
2. Select **Blank Application** and click **OK**. The *Set Application* dialog is displayed:



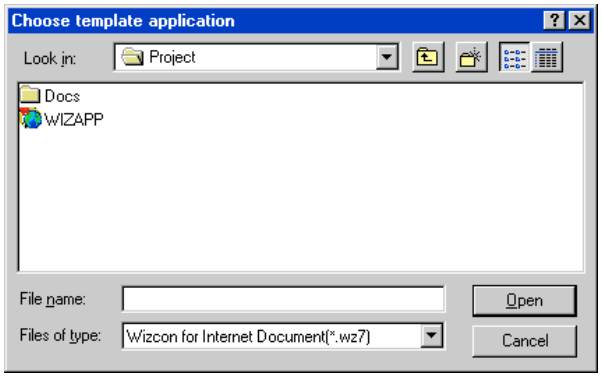
3. Enter a name for the application in the **Application Name** field.
4. Specify a folder for the application in the **Folder Name** field and click **Create**. The folder structure appears in the **Folders** list.
5. Click **OK** to close your settings and close the dialog.

➤ **To create a template application:**

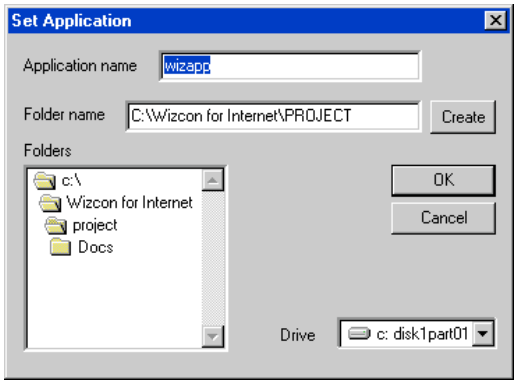
1. From the *File* menu, choose **New Application**. The *New Application* dialog is displayed:



2. Select **Template Application** and click **OK**. The *Choose template application* dialog is displayed:



3. Select the ***. Wz7** file of the application upon which you want to base the new application, and click **Open**. The dialog closes and the *Set Application* dialog is displayed:



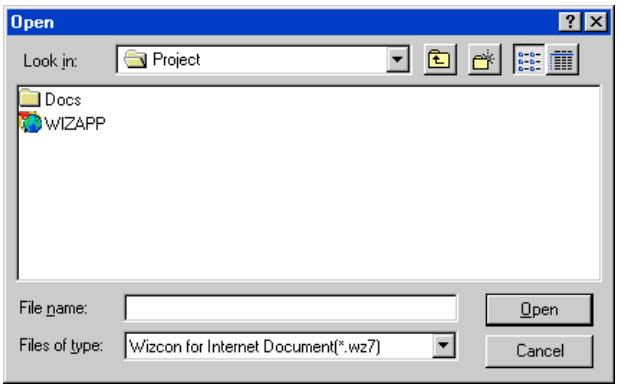
4. Specify a new name for the application, in the **Application Name** field.

5. Specify a new folder for the application in the **Folder Name** field and click **Create**. The folder structure appears in the **Folders** list.

6. Click **OK** to save your settings and close the dialog. Wizcon closes and then reopens with the default settings of the selected application.

➤ **To open an existing application:**

1. From the *File* menu, choose **Open Application**. The *Open Application* dialog is displayed:



2. Select the ***.wz7** file of the application you want to open and click **Open**. Wizcon closes and then re-opens displaying the specified application.

Chapter 6
Communication Drivers

About this chapter:

This chapter describes how to define communication drivers in Wizcon, as follows:

Overview, on the following page, describes an overview of communication drivers and communication blocks.

Defining Communication Drivers, page 6-3, describes how to add and remove communication drivers to and from your application.

Communication Driver Properties, page 6-5, describes how to define general driver properties, serial port parameters and communication blocks. It also describes how to view general driver information.

Defining OPC (Wizcon Client), page 6-13, provides an overview of OPC (OLE for Process Control).

OPC Driver Properties, page 6-13, describes defining OPC driver properties.

Communication drivers handle communications with external devices, such as PLCs, industrial instruments, remote computers and fieldbuses. These drivers are separate program files, which you install when installing Wizcon. Communication driver file names have the format **VPIWN??.DLL**, in which **??** is the two- or three-letter code of the driver. Since each communication driver is different, the PC Soft driver information documentation should be consulted for specific communication driver details.

You can define communication blocks to improve driver performance when working with large quantities of tags. These blocks enable you to transfer large blocks of information instead of individual data items. For more details on communication blocks, refer to page 6-8.

The first step in designing a Wizcon application is to define the communication drivers and blocks. You then define the *tags*, which are control values monitored by the system. They are used as internal variables for :

- Calculations and display.
- Communication with PLC's in order to represent data from PLC memory or to send commands to PLC's.

Tags are described in more detail in *Chapter 7, Tags*.

Caution: In fast Pentium PCs with a 16550 UART (serial interface chip), Windows 95 default settings may cause communication errors on serial communication drivers. To overcome this problem, lower the buffer sizes on the UART in the following menu: Start ⇨ Settings ⇨ Control Panel ⇨ System ⇨ Device Manager ⇨ Ports ⇨ Communication Port 1.4 ⇨ Port Settings ⇨ Advanced.
Use a trial and error method to reach the optimum setting.

Menu ⇨ Design / Communication Drivers

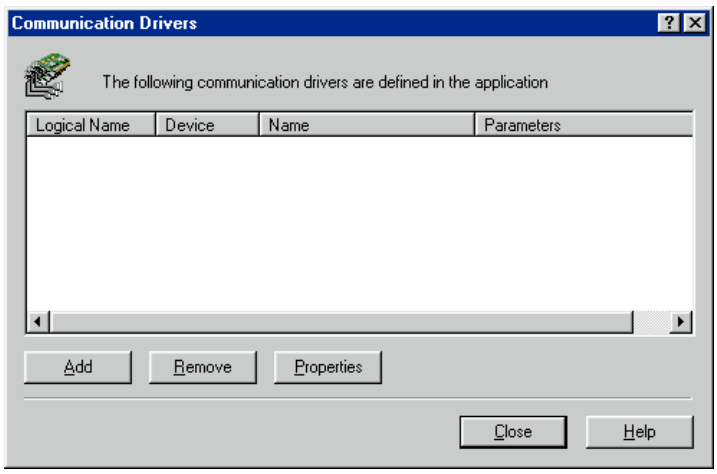
Communication drivers are defined in the *Communication Drivers* dialog, in which you can add and remove drivers as described on the following page, and define driver properties, as described on page 6-6.

➤ **To add/remove a communication driver:**

In the Control Panel of the Wizcon Application Studio, double-click the **Communication Drivers** icon.

Or,

In the *Design* menu of the Wizcon Application Studio, select **Communication Drivers**. The *Communication Drivers* dialog is displayed:



The following driver information is displayed in the dialog:

Logical Name	Specifies the name given to the driver for application identification purposes.
Device	Specifies the name of the physical device. The standard name is COM**n**, where **n** is a number that refers to the serial port of the computer. Drivers that use standard TCP/IP, or proprietary network, do not require this parameter.
Name	Specifies the name of the communication driver DDL file. For example, VPIWNxxx.
Parameters	Specifies the Device access rights.

- To add a driver:

  Activate the **Add** button. The *Wizcon Communication Driver Setup* dialog is displayed in which you can select a driver from those you installed when you installed Wizcon.

- To remove a driver:

  Select the driver you want to remove and activate the **Remove** button. The driver is deleted from the list of drivers.

Note: After defining communication drivers, you will need to restart Wizcon, so that the definitions you defined are recognized.

Communication Driver Properties

Communication driver properties are defined in the *Communication Driver* dialog, as shown on page 6-3.

➤ **To define communication driver properties:**

In the *Design* menu of the Wizcon Application Studio, select **Communication Drivers**. The *Communication Drivers* dialog is displayed, as shown on page 6-3. Select a driver and then click the **Properties** button to display a dialog in which you can define communication driver properties.

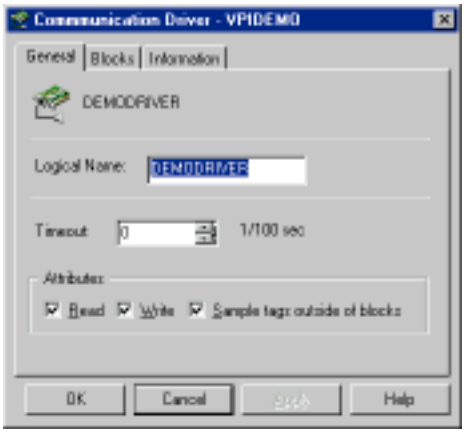
In this dialog you can define the following:

- General driver properties, in the **General** tab, as described on page 6-6.
- Serial port parameters, in the **Serial** tab, as described on page 6-7.
- Communication blocks, in the **Blocks** tab, as described on page 6-8.

You can also view information about the driver in the **Information** tab, as described on page 6-12.

Defining General Driver Properties

You can define general driver properties in the **General** tab of the *Communication Driver* dialog, as described below. (Refer to the previous page to see how to access the dialog).



The following options are available:

Logical Name — Specifies a name for personal identification purposes.

Timeout — Defines the period of time (in one hundredth of a second) during which the system waits for response from a device before indicating a communication failure.

Attributes

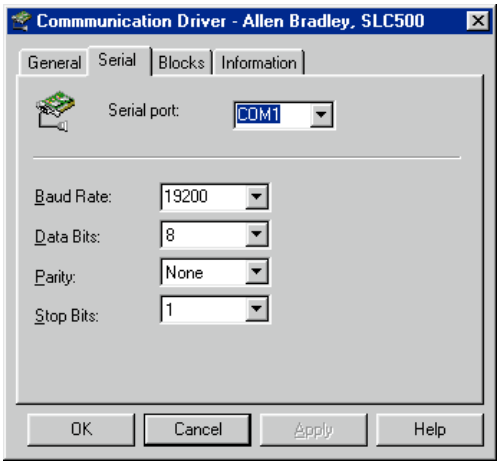
Read: Check to enable read only operations with the device.

Write: Check to enable write only operation with the device.

Sample tags outside of blocks: Check to enable the sampling of tags not included in the communication blocks. If you do not select this option, communications will be limited to tags within the blocks.

Defining Serial Port Parameters

You can define serial port parameters in the **Serial** tab, of the *Communication Driver* dialog, as described below. (Refer to page 6-3 to see how to access the dialog).



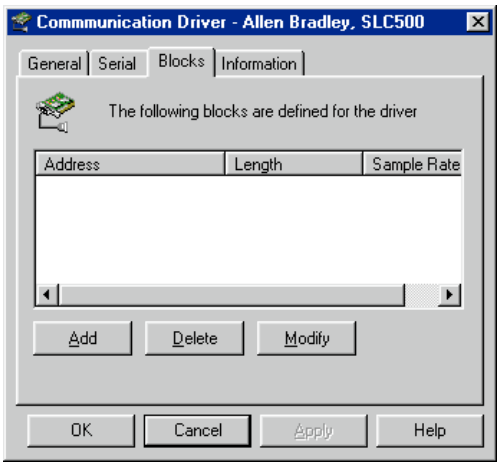
The following options are available:

Serial port — Enter the appropriate device name. The standard name is COM**n** , where **n** is a number that refers to the serial port of the computer. For example, COM1 for port 1.

The **Baud Rate, Data Bits, Parity** and **Stop Bits** fields are set to the default setting determined by the PLC or manufacturer. (If they have been defined they will automatically be displayed).

Defining Communication Blocks

You can define communication blocks in the **Blocks** tab, of the *Communication Driver* dialog, as described below. (Refer to page 6-3 to see how to access the dialog).



You can define communication blocks to improve driver performance when working with large quantities of tags. These blocks enable you to transfer large blocks of information instead of individual data items.

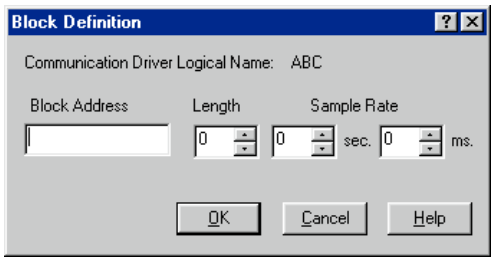
The rationale for assigning communication blocks is the reduction in transmission overhead. In serial communications (RS-232C), the serial bit rate is relatively slow and 10 to 20 bytes are required just to address the items to be transferred. Thus, while approximately 20 extra bytes are required to transfer one single item, large blocks containing several items can be assigned instead, using the same addressing overhead.

It should be noted, however, that not all devices support block transfers, and the ones that do may impose restrictions on block size or item types. For more details, see the PC Soft driver information documentation.

Wizcon enables you to define contiguous blocks in the address space of the external device. These blocks can then be transferred in single communication transactions.

➤ **To define a communication block:**

Click the **Add** button in the *Communication Driver* dialog, as shown on the previous page. The following dialog is displayed.



The following options are available:

Block Address — The starting address of the block in the device. For address format specifications, see the relevant communication driver section in the PC Soft driver information documentation.

Length — Number of items in the block.

Sample Rate — Sampling rate of the block in seconds and milliseconds.

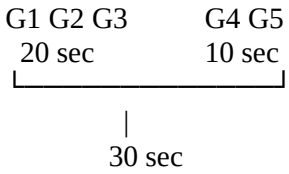
Note:

- The maximum number of blocks that can be defined for each driver is 256.
- In special cases, blocks may be defined differently. For more information, refer to the PC Soft driver information documentation.

Remember:

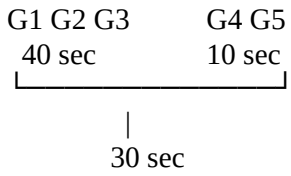
- Though blocks are efficient in terms of transfer rate, defining large blocks that cover unnecessary items may degrade system performance.
- It is better to define small blocks with fast sampling rates for items that are monitored frequently, and leave the remaining data in larger blocks with slower sampling rates.
- Although blocks may overlap each other, this situation is undesirable since identical tags that belong to two overlapping blocks will be sampled randomly. There is no guarantee which block will be sampled first.
- The relationship between the block and tag sampling rates (specified in the *Block Definition* and *Analog/Digital Tag Definition* dialogs, (respectively) is such that the slower of the two rates will always override the other.

  For example, If you define a communication block for five tags with a block sample rate of 30 seconds. Three of the tags will be assigned a tag sample rate of 20 seconds, and the remaining two tags assigned a tag sample rate of 10 seconds. The following illustration will clarify the example:



  The tags will be sampled only after 30 seconds have elapsed since the last time the block was sampled.

However, if you define a sampling rate for a tag group slower than the block sampling rate, as in the following illustration,

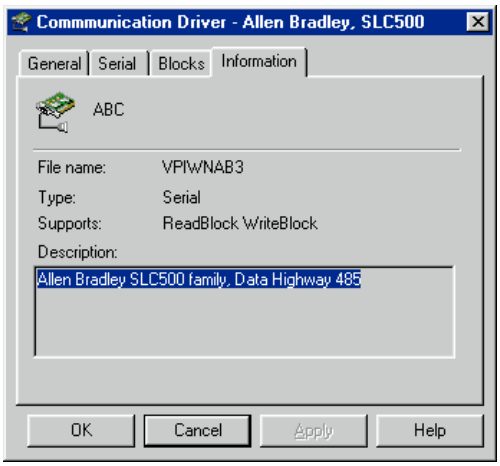


the tags in that group (the 40-second group in the example above) will be sampled whenever the amount of time specified by the slower rate has elapsed.

It is therefore recommended to group tags into blocks according to their sample rate.

Viewing Driver Information

You can view driver information in the **Information** tab, of the *Communication Driver* dialog, as described below. (Refer to page 6-3 to see how to access the dialog).



The following information is available:

File name The driver file name.

Type This field can contain one of two parameters:

Serial which defines parameter for serial communication (RS-232C protocol).

NUL which is not serial and can use an external library, or device drivers, supplied by an external provider.

Supports Describes the function which the driver supports.

Description The name of the driver.

Defining OPC (Wizcon Client)

OPC (OLE for Process Control) is an industry software standard designed to provide business applications with easy access to industrial plant floor data.

Using OPC technology, a system integrator can create a common interface for exchanging data with hardware field devices or other software that can be reused by this client program, and other HMI, SCADA and custom applications.

This client program uses OPC technology to exchange data with HMI and SCADA software and OPC servers.

For further information see *Appendix F, Networking with OPC Using DCOM.*

OPC Driver Properties

Communication drivers are defined in the *Communication Drivers* dialog, in which you can add and remove drivers as described on the following page, and define driver properties, as described on page 6-6.

➤ **To add/remove a communication driver:**

In the Control Panel of the Wizcon Application Studio, double-click the **Communication Drivers** icon.

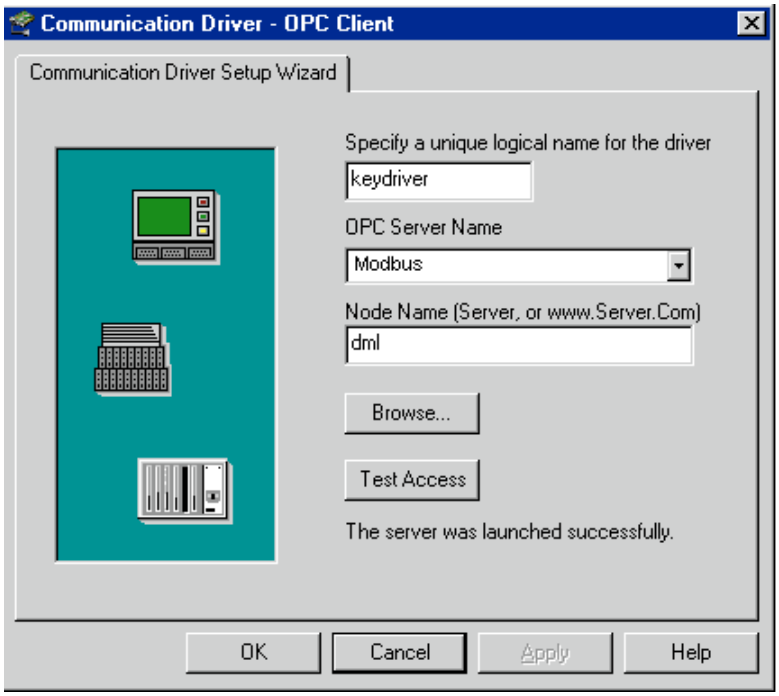
Or,

In the *Design* menu of the Wizcon Application Studio, select **Communication Drivers**. The *Communication Drivers* dialog is displayed on page 6-3.

OPC communication drivers are defined in the Communication Driver dialog, as shown on page 6-3.

➤ **To define communication driver properties:**

In the *Design* menu of the Wizcon Application Studio, select **Communication Drivers**. The *Communication Drivers* dialog is displayed, as shown on page 6-3. Select a driver and then click the **Properties** button to display The *Communication Driver - OPC Client* dialog in which you can define communication driver properties.



In this dialog you can define the following:

Logical Name Specifies the name given to the driver for application identification purposes.

OPC Server Name

Name of a specific interface.

OPC Servers are provided by different vendors. The code written by the vendor determines the devices and data to which each server has access, the way in which data items are named and the details about how the server physically accesses that data.

For this reason, we expect that the OPC Server will generally be a local or remote program which includes code that is responsible for data collection from a physical device.

Node Name

Specifies the name of your computer.

If your OPC is running from a remote site you must make sure that DCOM™ is configured correctly to provide networking. Refer to *Appendix F, Networking with OPC Using DCOM.*

Chapter 7
Tags

About this chapter:

This chapter describes how to define and use tags in Wizcon, as follows:

Overview, on the following page, describes an overview of Wizcon tags.

Defining Tags, page 7-4, describes how to add a tag, record tag value changes and communicate online with other applications through the DDE interface.

Single Tag Input, page 7-24, describes how to assign an immediate value to a specific tag.

The following options can be very useful in large projects:

MultiAdd Tags, page 7-26, describes how to add a large number of tags to an existing tag list.

Exporting Tags, page 7-29, describes how to generate a list of tag definitions into ASCII format.

Importing Tags, page 7-32, describes how to import a list of tag definitions to append or to replace the current list of tag definitions.

Defining Tag Properties, page 7-34, describes how to define some tag properties.

The term *tags* in Wizcon refers to control values monitored by the system. These values are similar to variables in a programming language such as BASIC, PASCAL, and C. Like their programming counterparts, each value is identified by a unique name and can be one of several data types, such as integer, real, or Boolean.

PLC tags are distinguished from other variables in that they can be associated with external device components, such as registers or I/O points in PLCs, memory locations in remote devices. A tag value represents the value of an external component or device, so that referencing the tag is equivalent to referencing the component or device itself. Updating a tag causes the external component or device to be updated as well. Thus, a Wizcon PLC tag is actually a link to external devices.

Once tags are defined in the Wizcon tag definition module, they can be used in other modules for displaying, calculating and control functions.

Basic Principles

In Wizcon, a tag can be associated with one of the following sources: PLC, Dummy or Compound, as described below:

- **PLC Tags**: These tags are associated with external devices and mapped to the external device variables (for example, PLC registers). Wizcon samples these tags periodically through the communication driver so that changes of value in the field device variable is automatically transferred to the associated tag. The change of PLC tag value in Wizcon is recognized in the external device.

- **Dummy Tags**: These tags represent internal variables and are used for a variety of calculations, control and other application-related needs. Dummy tags are updated by user input or changed by other application modules. These tags are set to 0 upon system initialization.
- **Compound Tags**: Tags that are linear calculations based on values of other tags.

According to their data types, tags can be one of the following:

- **Digital**: Discrete logic tags that have Boolean values of TRUE (1) or FALSE (0).
- **Analog**: Tags that have numeric values represented in various formats (signed or unsigned integer, floating point, BCD).
- **String**: Tags that are defined to receive alpha-numeric strings.

Tag Icons

Wizcon marks tag-type with icons. Below are the analog and digital icons used to mark tags in the Studio Tag List.

Analog Tag

Digital Tag

The tag sources and types are defined in the Tag Definition procedure described in the following pages.

Before defining tags, it is recommended that you first define user groups. Once you define the user groups, you may freely add individual users at any time to any group. To define user groups, refer to *Chapter 5, Getting to Know the Application Studio.*

This section describes how to define a tag, as described below and how to modify and delete tags as described on page 7-22.

Note: You may want to refer to the Getting Started guide to see how to define a tag in more detail.

➤ **To define a tag:**

Click the **Tag** icon in the Wizcon Application toolbar.

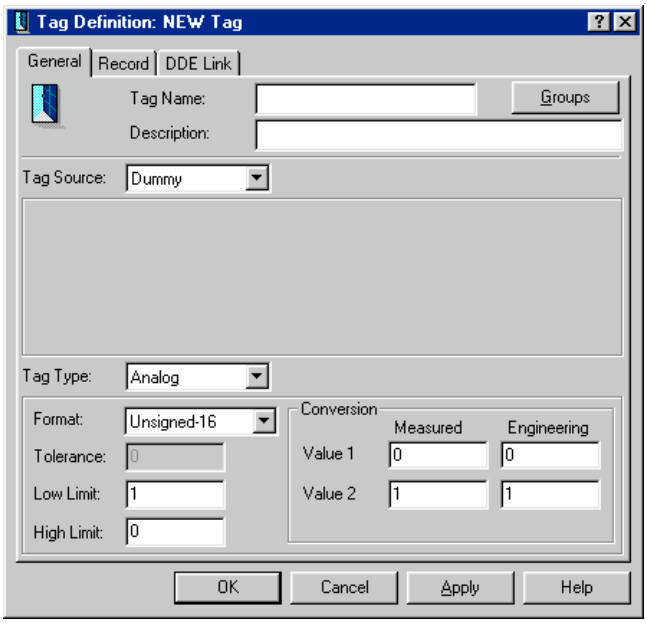
or,

From the *All Containers* section of the Wizcon Application Studio, right-click **Tags** and select **Add Tag** from the displayed pop-up menu. The *Tag Definition: NEW Tag* dialog appears (as shown on the following page), in which you can do the following:

- Add a tag, in the **General** tab, as described on page 7-5.
- Determine whether tag value changes will be recorded, in the **Record** tab, as described on page 7-16.
- Define an external application with which Wizcon can communicate, in the **DDE Link** tab, as described on page 7-18.

Adding a Tag

You can add a tag to your application in the **General** tab of the *Tag Definition: NEW Tag* dialog, as described below. (Refer to the previous page to see how to access the dialog).



The following options are available:

Tag Name — Enter a unique tag name with no more than 32 characters.

Description — Enter a brief description of the tag.

Groups — Click to display the *Set Group Access* dialog in which you can define security groups so that only authorized operators can set the tag value. For more details about defining security groups, refer to the section on *Authorization Groups* on page 7-14.

Tag Source

This field is divided into two sections: a tag source option and below it, the tag source parameters. Click to display a drop-down list in which you can choose the source to work with: Your choice will determine the available tag source parameters.

Dummy: select for internal application-related processing and needs. The Dummy tag has no tag source parameters.

PLC: select to associate with a PLC driver. The tag source parameters are described on page 7-7.

Compound: select for automatic calculations. The tag source parameters are described on page 7-10.

Tag Type

This field is divided into two sections: a tag type option and below it, tag type parameters. Click to display a drop-down list in which you can choose the tag type to work with. Your choice will determine the available tag type parameters.

Analog, (the default tag type) as described on page 7-11,

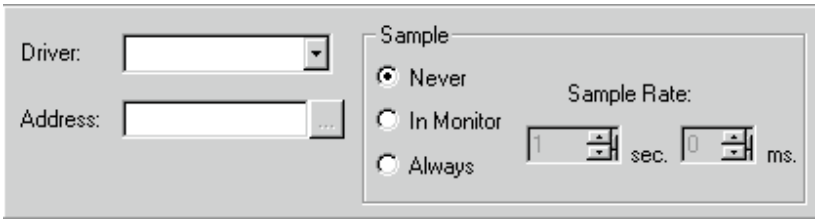
Digital, as described on page 7-13,

String, as described on page 7-13.

The default tag type is **Analog**.

PLC Tag Source Parameters

You can associate the tag you want to define with a PLC driver, by clicking in the **Tag Source** field of the *Tag Definition: NEW Tag* dialog, as shown on page 7-5, and selecting the driver from the drop-down list. The **Tag Source** parameters will appear as follows:



The following options are available:

Driver — Specify the driver name which is responsible for communication with the relevant external device. The available communication drivers should be previously defined in the communication driver definition module. For a list of currently defined communication drivers, click on the arrow to the right of the field.

Address — The address string specifies the location of the tag data source in the PLC or other field device. Generally, the address represents combination of a PLC unit and PLC register number and type. The exact address format is specific for each PLC and depends on the driver used for the communication. For more details, refer to the driver on-line reference.

Sample

External devices are sampled periodically to update the values of their associated tags. Thus, a tag value always reflects the state of its associated device. Each tag is assigned its own sampling rate. However, if the device component, with which the tag is associated, is included in a communications block, that block will ultimately determine the sampling rate. The following options are available:

Never: The external device is never sampled to update its respective tag.

In Monitor: The device is sampled to update its respective tag only when the tag's value is requested by one of Wizcon modules (for example, displayed in an Image). This option is useful for minimizing communications traffic, thereby improving system performance. Select this option for tags that are used for monitoring field activities and do not record into history files. Do not select this option for tags that are used for alarm definition.

Always: The device is always sampled to update its respective tag. If you select this option, specify the sample rate in seconds and/or milliseconds.

Note that if the tag is included in a communication block, the block will ultimately determine the sampling rate.

The fastest rate at which Wizcon will sample a tag is 50 milliseconds.

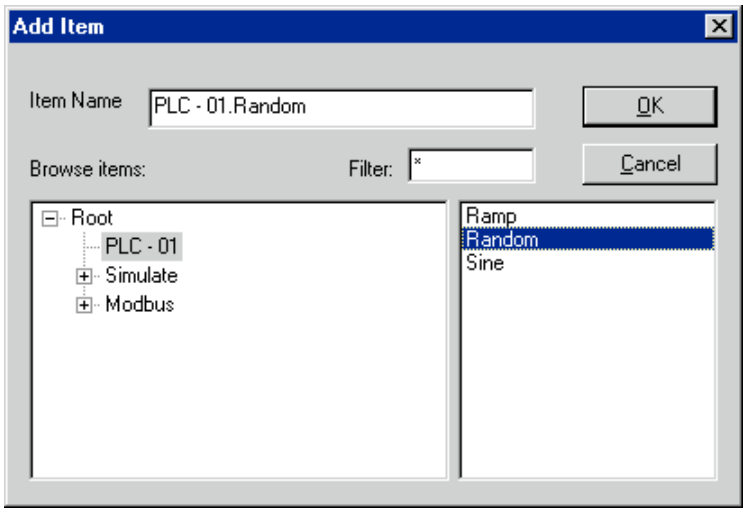
➤ To Define OPC Source Parameters

You can associate the tag you want to define with an OPC driver, by clicking in the **Tag Source** field of the *Tag Definition: NEW Tag* dialog, as shown on page 7-5, and selecting the driver from the drop-down list. The **Tag Source** parameters will appear.

1. From the Driver drop-down list select the OPC driver.

2. In the Address field click on the **Browse** button [...]. The *Add Item* dialog opens.

   Note that this dialog displays only if your OPC Server supports Browsing. If not you must enter the address manually.



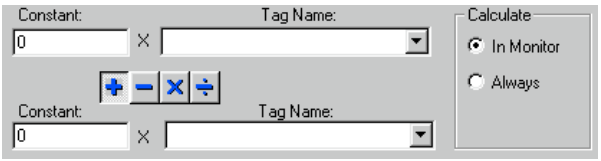
3. From the Browsed Items list, select the name of the item that you want to be linked to and press OK to complete the operation.

Compound Tag Source Parameters

A compound tag is an analog or digital tag, the value of which is a combination of two other tags.

➤ **To define compound tags:**

Click in the **Tag Source** field of the *Tag Definitions: NEW Tag* dialog, as shown on page 7-5, and select **Compound** from the drop-down list. The Tag Source parameters will appear as follows:



The compound tag formula is as follows:

`Constant1 * Tag1 oper Constant2 * Tag2`

Where *oper* is one of the following operators: +, -, / (division), or * (multiplication).

Note that in the tag and operator fields, you can click on the arrow to the right of the fields, to obtain a list of available tags and operators.

Define the compound tag in the **Calculate** field as either **In Monitor** or **Always**. Select **Always** if you want the compound tag to be calculated always (also when the tag is not **In Monitor**).

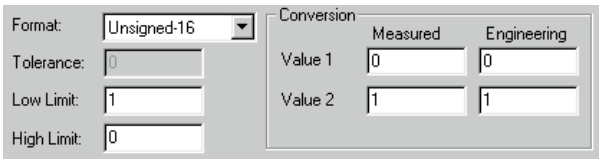
After you define the formula, whenever the individual tags are sampled, the compound tag will be assigned a value according to the evaluated formula.

Analog Tag Type

Analog tags have numeric values represented in various formats (signed or unsigned integer, floating point, BDC).

➤ **To define an analog tag type:**

Click in the **Tag Type** field of the *Tag Definitions: NEW Tag* dialog, as shown on page 7-5, and select **Analog** from the drop-down list. The Tag Type parameters will appear as follows:



The following options are available:

Format This field is used to specify the data format of the external device. The options include:

Unsigned 16: Unsigned 16-bit integer.

Signed 16: Signed 16-bit integer.

BCD: 4-digit BCD format.

Float: 4-byte IEEE single-precision, floating point format.

Signed 32: Signed 32-bit integer.

Unsigned 32: Unsigned 32-bit integer.

Tolerance Specifies the minimum amount of change that must occur to a tag value, since the last change, for an event to be recognized. Using this parameter is a convenient way of smoothing sensor fluctuations.

Tolerance applies to analog PLC tags only. The value is in the external device measurement units (raw PLC units) and not engineering units (ref Conversion).

Low/High Limit These fields specify the upper and lower limits of the tag's value. If the low limit you specify is greater than the high limit, then no limits are set.

Conversion External devices normally generate values according to their internal format and in order to obtain the maximum accuracy. For instance, a temperature measured in the field, which is in the range between 0 and 600 degrees, may be presented as a numerical range of between 0 to 65535. To convert the field measured value in engineering units, Wizcon uses the linear conversion.

Value 1 Measured: Measured raw value sample.

Value 1 Engineering: Corresponding engineering value sample.

Value 2 Measured: Another measured raw value sample.

Value 2 Engineering: Another corresponding engineering value sample.

For example, if you specify the following:

Value 1 Measured = 0.

Value 1 Engineering = 0.

Value 2 Measured = 1.

Value 2 Engineering = 2.

The converted value would be the raw PLC value multiplied by two.

Digital Tag Type

A digital tag type is a discrete logic tag with Boolean values of TRUE (1) or FALSE (0).

➤ **To define a digital tag type:**

Click in the **Tag Type** field of the *Tag Definitions: NEW Tag* dialog, as shown on page 7-5, and select **Digital** from the drop-down list. The Tag Type parameters will appear as follows:

The following option is available:

Filter Used for *debouncing*, which is filtering out oscillations.

String Tag Type

A string tag can receive an alphanumeric string as a tag value.

➤ **To define a string tag type:**

Click in the **Tag Type** field of the *Tag Definitions: NEW Tag* dialog, as shown on page 7-5, and select **String** from the drop-down list. The Tag Type parameters will appear as follows:

In the **Width** field, specify the maximum number of characters that you want the string to include. The maximum length of a string tag is 80 characters.

Authorization Groups

Wizcon allows you to define security groups for changing tags value by an operator, so that only authorized operators can set the tag value. This is implemented by assigning authorization groups to each tag. Operators who do not belong to any of the assigned groups will not be authorized to change tag values.

Note: All operators can read tag values, but only authorized operators can change them.

Operator authorization is discussed in more detail in *Chapter 5, Getting to Know the Application Studio*.

Once a group is assigned to a tag, any operator who belongs to that group can perform tag value operations on that tag.

➤ **To assign groups to a tag:**

Activate the **Groups** button in the *Tag Definitions: NEW Tag* dialog, as shown on page 7-5. The *Set Group Access* dialog is displayed:

In order to set values, a group must be assigned to a tag.

Click a group to select it. Clicking a selected group will deselect the group.

Activating the **Reset All** button will deselect all the groups. Activating the **Set All** button will select all the groups.

Recording Tag Value Changes

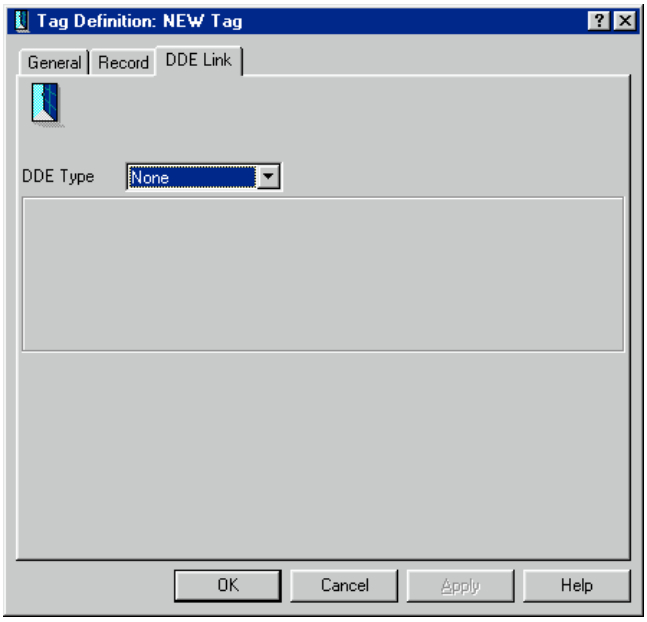
You can determine whether tag value changes will be recorded to file using the **Record** tab of the *Tag Definition: NEW Tag* dialog, as described below. (Refer to page 7-4 to see how to access the dialog).

The following options are available:

Never	Specifies that the tag value will never be recorded.
Changes	Specifies that the tag value will be recorded whenever it is sampled and is found to have changed by more than the tolerance since the previous sample.
Update	Specifies that the tag value will be recorded whenever a driver is set to update the values (even if no changes were detected.)
Every	Specifies that the tag value will be recorded each specified time interval.

Note: The fastest rate at which Wizcon samples a tag for recording is 50 milliseconds.

Wizcon can communicate online with other applications (such as Excel) through the DDE (Dynamic Data Exchange) interface, as shown in the **DDE Link** tab of the *Tag Definition: NEW Tag* dialog, as described below. (Refer to page 7-4 to see how to access the dialog).



The DDE is a common protocol that allows applications to exchange data freely, using either one-time data transfers, or ongoing transfers in which applications send updates to each other whenever new data is available.

The **DDE Link** tab contains options that enable you to specify that the tag will be linked to another application through the DDE. This will cause the tag value to be updated immediately, whenever a change occurs in the object to which the tag is linked.

You can choose between three options:

DDE Type: Click in the field to display a drop-down list with the following options. Selecting an option will display its parameters.

None: Specifies that no DDE link is associated with the tag. This is the default option.

Single, as described below.

Block, as described on the following page.

DDE Type - Single

Select **Single** from the *Tag Definition: NEW Tag* dialog for tags that will not be part of a DDE Client Block.

The following fields define the DDE connection:

Application The application to which you want to link the tag.

Topic The topic in the application that contains the object to which the tag will be linked.

Item Name The name of the item to which you want to link the tag. The name is taken from the application and topic to which the tag is linked. For example, an Excel cell number.

Link Enables you to define the DDE Link as: **Always** linked to the DDE server or **In Monitor**. When selecting **Always**, every change will be passed by WIZDDEC to WizPro, even if the tag is not **In Monitor**.

WIZDDEC enables your Wizcon application to run as a DDE client and receive information from server applications. Refer to *Chapter 22, Wizcon DDE Support* for more details about WIZDDEC.

DDE Type - Block

Select **Block** from the *Tag Definition: NEW Tag* dialog to connect a tag to one item from a DDE block.

The following options are available:

Block Name The block to which the tag will belong.

Row The row number of the item in the block relative to the start position.

Column The column number of the item in the block relative to the start position.

Link Enables you to define the DDE Link as: **Always** linked to the DDE server or **In Monitor**. When selecting **Always**, every change will be passed by WIZDDEC to WizPro, even if the tag is not **In Monitor**.

The WizDDEC block mechanism enables Wizcon to receive many tag values from the server in one update message. This improves the communication between Wizcon and the DDE server.

A common use for DDE client blocks is a setup in which a DDE server updates at once a block of items that make up a recipe. Define DDE client blocks only if data items in the server change simultaneously (within milliseconds). For more details, refer to *Chapter 22, Wizcon DDE Support*.

PLC tags linked to DDE items will actually cause the DDE application to update the PLC, and the updated value sampled from the PLC will be automatically transferred to the DDE application. However, if any Wizcon module reads or writes tag values, it will first access the PLC tags and then update the DDE link.

Deleting and Modifying Tags

After defining a tag you can modify it, as described below.

➤ **To modify a tag:**

1. In the **All Containers** section of the Wizcon Application Studio, click on **Tags** to display the List of Tags.
2. In the List of Tags section, right-click the tag you want to modify and select **Modify Tag** from the popup menu.

or,

Double-click on the tag in the List of Tags section. The *Tag Definition* dialog is displayed in which you can modify the tag.

You can delete a tag, as described below.

➤ **To delete a tag:**

1. In the **All Containers** section of the Wizcon Application Studio, click on **Tags** to display the List of Tags.
2. In the List of Tags, right-click the tag you want to delete and select **Delete Tag** from the popup menu. A dialog is displayed in which you can confirm your request or cancel it.

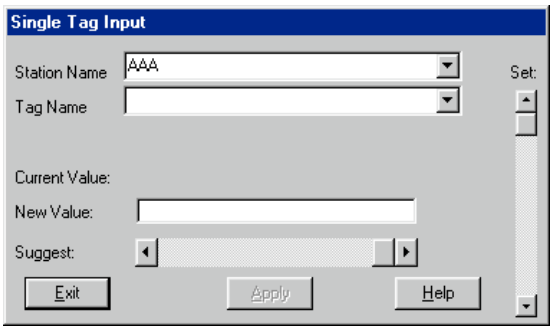
This section describes how to assign an immediate value to a specific tag.

➤ **To define single tag input:**

In the Control Panel of the Wizcon Application Studio, double-click the **Single Tag** icon.

Or,

From the *WizTools* menu of the Wizcon Application Studio, select **Single Tag**. The *Single Tag Input* dialog is displayed:



The following options are available:

Station Name — The Wizcon network station to which the tag belongs.

Tag Name — The tag for which the value is to be modified. Click on the arrow on the right side of the field to display a drop-down list of tags. When a tag is selected, its description is displayed underneath the **Tag Name** field and its value is displayed in the **Current Value** field.

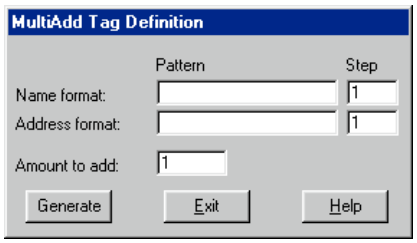
Current Value — Specifies the current value of the selected tag.

New Value	Enter the new tag value, or click on the arrows in the **Suggest** field slider, to determine a new tag value.
Set	Specifies a new current value which is written immediately.
Suggest	Specifies a new current value which is displayed in the **New Value** field and written by clicking **Apply**.

The MultiAdd operation is used to automatically generate a group of tags according to a user-defined pattern format.

➤ **To define tag pattern format:**

1. In the **All Containers** section of the Wizcon Application Studio, click on **Tags** to display the List of Tags.
2. In the **List of Tags** section, right-click the tag you want to add to a group and select **MultiAdd** from the popup menu. The *MultiAdd Tag Definition* dialog is displayed:



This dialog is used to generate a pattern for tags to be added to the existing tag list. Once a pattern is defined for the **Name format** and **Address format** fields, you can activate the **Generate** button to add tags to the list according to the pattern you defined.

The following options are available:

Name format The contents for this field can be any of the following characters:

*****: This character will remain as is in the next tag.

A: This character will be incremented alphabetically.

D: This character will be incremented in decimal numeric order.

H: This character will be incremented in hexadecimal numeric order.

O: This character will be incremented in octal numeric order.

#: This character will cause whatever character appears in that position to be incremented according to its specific character type. If the character is alphabetical, it will be incremented alphabetically; if the character is numerical, it will be incremented numerically. Any other character will remain as is.

Note: The MultiAdd operation increments only the tag name and address.

For example, if the current tag name is **WATER39X** and the next name format was defined as *******DHA**, the MultiAdd operation will cause the tag name **WATER39Y** to be generated.

Note that if the format length is less than the current name/address length, the format will affect the right part of the name/address. For example, if the name format was defined as ****HHH**, and the current name is **WATER001**, the next name will be **WATER002**.

Address format The contents used for the **Name format** field can also be used for the **Address format** field.

Pattern and Step Specifies incremental amounts. You can enter any numerical value from 1 to 7. The Name and Address of the next tag will be incremented according to the amount specified in these fields. For example, in the **Name format** field, if you entered **AA** for the **Pattern** and **2** for the **Step**, the next tag will be called **AC**.

Amount to add Specify the number of tags that will be added to the list when the **Generate** button is activated.

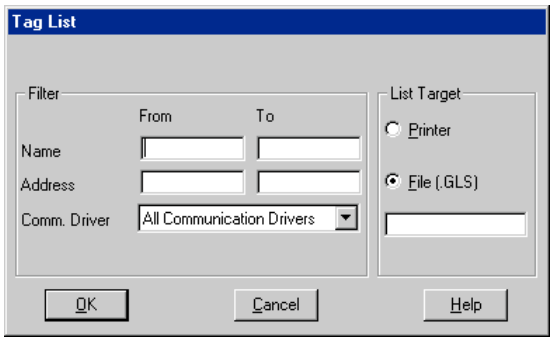
After you set the MultiAdd definition, activate the **Generate** button to generate the specified tag pattern.

The **Export Tags** option enables you to generate a tag list file, which is a list of tag definitions in ASCII format. You can edit the file to add, modify or delete tags. You can then import the file back into the system.

The list file is saved as an ASCII file with a GLS extension, as described in more detail on the following page.

➤ **To generate a list of tag definitions:**

In the **All Containers** section of the Wizcon Application Studio, right-click **Tags** and select **Export Tags** from the popup menu. The *Tag List* dialog is displayed:



The following options are available:

Name — Specifies the tag you want to filter.

Address — Specifies the address you want to filter.

Comm. Driver — Specifies the name of the communication driver.

List Target — Specifies the target destination of the list to be generated: **Printer** or **File (.GLS)**. You can select **Printer** to send the list to the printer, or **File (.GLS)** to save the list in a file with the extension .GLS. For

File (.GLS), specify the name of the file without the extension. The file will be located in the application directory specified in the *Set Default Paths* dialog, which is described in the *Specifying Active Printers* section in *Chapter 5, Getting to Know the Application Studio.* An example of a GLS file is shown below.

You can set filter conditions so that only specific tags will appear in the generated tag list.

The **Filter** and **Address** fields in this dialog are in From/To format and are used to set the tag list filter. In addition, you can specify the tag list target.

If **File** is selected as the target, the filename, without the path or extension, must be specified. The filename you specify will be given the extension GLS, and the file will be placed in your Wizcon application directory.

GLS File Format

Tag list files (.GLS) are ASCII files that you edit, or create and add to or replace the existing Wizcon tag list.

Note: Long tag names, address strings and additional parameters in tag definitions make length of a line in a GLS file over 256 bytes. In order to work with GLS files, use any Standard Windows Editor and set the Wrap option to OFF.

The title line of the tag list file has the following format:

```
;No., Name, Description, Groups, Rcd, Rcd-Rate, DDE-Params,
Source, Source-Params, Type, Type-Params
```

Note: Any line that begins with a semicolon (;) will be ignored.

Tag descriptions appear inside the characters < >. Addresses have the format driver address or empty spaces for dummy tags.

For **DDE-Params**, the parameters are Link (Y/N), and <Application:Topic:Item>.

For **Source-Params**, the parameters are:

PLC	Driver address Smp Smp-Rate
Dummy	No parameters
Compound	Const1 Tag1 Oper Const2 Tag2

For **Type-Params**, the parameters are:

Analog	Format Tol Conversion Min./Max.
Digital	Filter
String	Length

The lines following the title line contain the tags and their corresponding tag information.

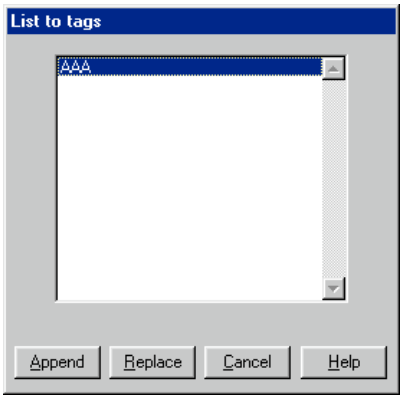
The following is an example of a tag list:

```
VERSION 5.11

; No. Name <Description> Groups Rcd Rcd DDE-Params
<Application:Topic:Item> Source Source-Params Type Type-
Params

1 SILO1KK < >       ffffffff  N   B I <BLOCK1:1:1>   DUMMY

2 PLC1  <Plc tag rec on change> ffffffff  C  N  PLC   0 0000001
I  1000  A  U   0    0   1   0   1   1/  0
```

The **Import Tags** option enables you to import a tag list file into the system. The imported file can replace the current list of tag definitions. It can also be appended to the current list of tag definitions.

➤ **To import tag definitions:**

In the **All Containers** section of the Wizcon Application Studio, right-click on **Tags** and select **Import Tags** from the popup menu. The *List to Tags* dialog is displayed:



This dialog lists existing tag list files (.GLS).

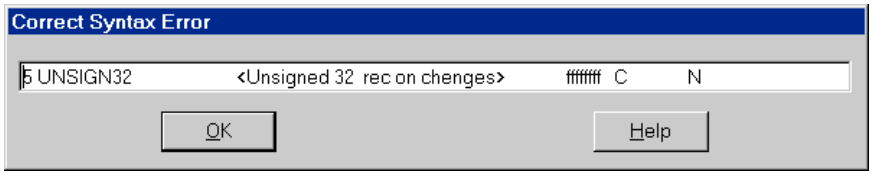
- To replace the current tag list:

  Select a file and activate the **Replace** button. You are prompted to confirm the replacement.

- To append the tag list to the current tag list:

  Select a file and activate the **Append** button. The tags in the file are appended to the end of the current list.

If a tag list file contains an error, a message appears showing you the line in the file containing the error, and a prompt asking you whether you want to correct the error (for each type of error, a different message appears). If you activate the **Yes** button, the following dialog appears to enable you to correct the error:

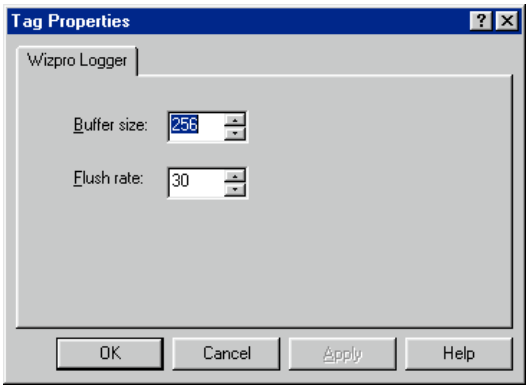


In this dialog, enter the correction to the error. For example, if the error is a non-existing tag in a compound tag definition, delete the tag and type an existing tag name.

You can define properties for the tag buffer size and the flush rate.

➤ **To define tag properties:**

In the **All Containers** section of the Wizcon Application Studio, right-click **Tags** and select **Properties** from the popup menu. The *Tag Properties* dialog is displayed:



The following options are available:

Buffer size — Determines the WizPro logger buffer size for history files, in lines (records). The maximum is 2048 records. Increase the value of this option if you anticipate that a large number of changes will occur at any time during the Wizcon session.

Flush rate: — Determines a value that will represent the WizPro logger flush to disk rate in seconds (for history files). The maximum is 3600 seconds.

Note: Restart Wizcon for changes to take place.

Chapter 8
Alarms

About this chapter:

This chapter describes how to define and use alarms in the Wizcon system, as follows:

Overview, on the following page, describes an overview of Wizcon alarms.

Basic Principles, on page 8-3, describes the basic principles of alarm definition.

Defining Alarms, page 8-4, describes how to define alarms, how to define a single action for an alarm and how to assign a name to alarm classes.

Alarm Properties, page 8-15, describes how to define a login and logout message, the time format that appears in the Events Summary and the alarm printout, and how to overwrite default print sequences.

Exporting Alarms, page 8-19, describes how to generate a list of alarms in ASCII format, and describes the ALS file format.

Importing Alarms, page 8-24, describes how to import alarm definitions from an ASCII file.

Alarm Help Files, page 8-26, describes how to create alarm help files.

Overview

Wizcon *alarms* are application messages used to notify operators of exceptional conditions in the plant. In addition, Wizcon generates system messages that provide operators with information concerning internal system events, such as communication driver failure, network communication errors and others.

Note: Alarms must be configured. System messages are automatically provided by Wizcon.

Wizcon alarms can be displayed in the special Events Summary or in a popup window. In each of these display options, operators can examine and handle numerous alarms by filtering and sorting them.

Only users with the appropriate authorization can define alarm conditions. Wizcon alarms are generated whenever predefined conditions exist. These condition types are explained later in this chapter.

Up to 65,000 alarms can be defined in Wizcon. Each alarm can be assigned different characteristics and properties during the alarm definition procedure.

Alarms in Events Summaries

Alarms are displayed in separate windows: in Events Summaries or in Popup Events Summaries, which are described in *Chapter 9, Events Summaries.*

To provide the operator with online help (such as operational instructions) when an alarm occurs, alarm messages may be linked to Help files. These files are explained later in this chapter.

Alarm Objects in Images

A special feature in Wizcon enables you to visualize alarm conditions in a graphical way by associating image objects with alarms. Alarm objects in images react to the conditions of the alarms in the alarm family with which they are associated. For example, if the alarm condition is true, the object may begin to blink or change colors. This feature is described in more detail in *Chapter 13, Image Animation*.

Alarms are defined in the Wizcon Application Studio. After defining an alarm, you can assign a name to alarm classes, as described on page 8-13.

Note: You may want to refer to the Getting Started guide to see how to define an alarm in more detail.

➤ **To define an alarm:**

Click the **Alarms** icon in the Wizcon Application Studio toolbar

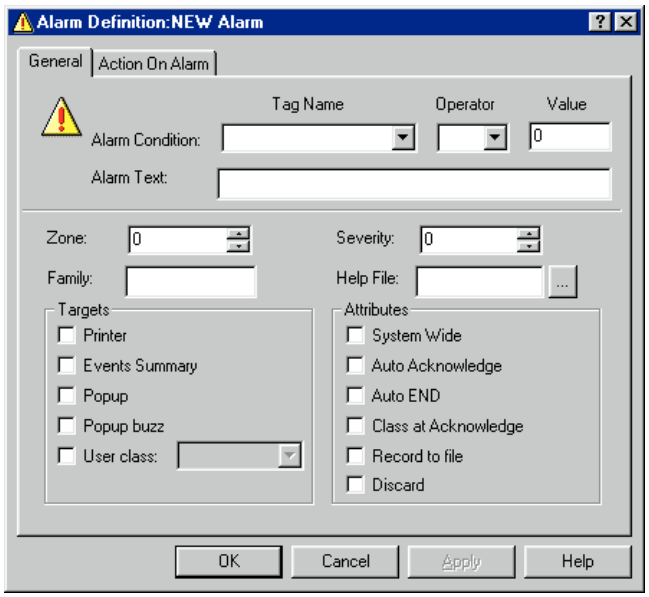
or,

In the All Containers section of the Wizcon Application Studio, right-click **Alarms** and select **Add Alarm** from the popup menu. The *Alarm Definition* dialog appears in which you can define:

- General alarm definitions, in the **General** tab, as described on the following page.
- A single action for an alarm, as described in the **Action on Alarm** tab, as described on page 8-12.

General Alarm Definitions

Alarm definitions are specified in the **General** tab of the *Alarm Definition* dialog, as shown below. (Refer to the previous page to see how to access the dialog).



The following fields must have entries:

Alarm Condition The following fields are available:

Tag Name: Specifies the tag for which the alarm is to be issued.

Operator: Specifies a logical operator or bit value that represents the condition in the alarm statement. (For more details about the alarm statement, refer to the section on Alarm Condition Statements, as described on page 8-8).

Value: Specifies the value used to test the alarm condition.

Alarm Text — Displays the alarm message. Define the message that will be displayed to the operator when the alarm is issued. The alarm message can include tokens, which are described in more detail on page 8-10.

The following fields are optional:

Zone — Specifies the area of the plant in which the alarm occurred. You can enter a zone area from 0 to 50,000. This value is used to classify and filter alarms in the Events Summary and Wizcon popup windows. Zone areas are described in more detail in *Chapter 12, Image Editor*.

Family — Specifies the name of the group to which the alarm belongs. The name can consist of up to 16 characters and is the link to alarm objects. It is also used for classification and filtering.

Severity — Specifies the priority order of each alarm. For example, a low priority could be 0 and a high priority, 50,000). It is also used for classification and filtering.

Help File — Specifies the name of the help file that contains information for the operator. For more details about creating alarm help files, refer to the section on Alarm Help Files, as described on page 8-26.

Targets — Specifies the alarm destination. The following options are available:

Printer: the alarm message is sent to print.

Events Summary: the alarm is displayed in an Events Summary.

Popup: the alarm is displayed in a Popup Events Summary.

Popup buzz: the alarm is displayed in a Popup Events Summary which will *buzz* when the alarm is displayed. If you do not select this option, the Popup Events Summary will not buzz when the alarm is displayed even if it was defined to do so in the *PopUp Buzz* dialog, which is described in *Chapter 9, Events Summaries*.

User class: Enables you to identify an alarm and to classify it in online and historical Events Summaries. Select this option and click on the arrow on the right of the field to select an alarm user class from a drop-down list of predefined classes. Each alarm can be assigned only one class.

*Note: Each class that appears in the list is defined by the operator in the User Class Definition section described in Chapter 5, Getting to Know the Application Studio***.**

Attributes

The alarm operational attributes include the following:

System Wide: Alarms can be limited to a single station or distributed among several Wizcon stations. Alarms are distributed to several stations using Wizcon network support facilities. For more details about network support, refer to *Chapter 23, Wizcon Network* and to the WizPro online reference.

If this option is selected, the alarm will be distributed to other stations in the network. It can be acknowledged from any station across the network. By default, alarms appear only on the station used by the operator.

Auto Acknowledge: Acknowledges alarms as if already acknowledged by the operator.

‘ **Auto END**: Ends alarms as if the condition that caused the alarm to be generated was already terminated.

Class at Acknowledge: Enables you to re-assign a User Class property to the alarm when the alarm is acknowledged. This means that you can change the routing of an alarm upon its acknowledgment.

Record to file: Records the alarm in the alarm history file.

Discard: Discards active alarms when the application is terminated.

Remember, if an alarm is defined with both the **Auto Acknowledged** and **Auto End** options, it will be considered inactive and will not be displayed in an Events Summary.

Alarm Condition Statements

This section describes how to enter the alarm condition statement in the *Alarm Definition* dialog, as shown on page 8-5.

The alarm condition statements, the **Tag Name**, **Operator**, and **Value** fields, can be entered in one of two formats:

- Logical Format: **Tag operation Value**, as described on the following page.
- Flag Format: **Tag bit Value**, as described on the following page.

Logical Format: **Tag operation Value**

Where **Tag** can be any tag name, **Value** can be any numerical value, and **Operator** can be one of the following relational operators: =, >, >=, <, <=, or <>.
All these operators have their standard mathematical meanings.

Examples:

`TEMP > 100`		This means that if the value of a tag called TEMP is greater than 100, the alarm will be issued.
`LEVEL <= 20`		This means that if the value of a tag called LEVEL is less than or equal to 20, the alarm will be issued.
`COUNT = 1000`		This means that if the value of a tag called COUNT equals 1000, the alarm will be issued.

Flag Format: **Tag bit Value**

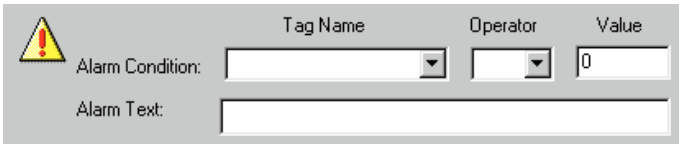
Where **Tag** stands for a tag name, **Value** stands for 0 or 1, and bit stands for the bit number in the tag value. Bits are numbered from 0 for the least significant bit, to 31 for the most significant bit.

Examples:

`LRMREG 3 1`		This means that if bit 3 of the value of a tag called LRMREG is 1, the alarm will be issued.
`STATUS 15 0`		This means that if bit 15 of the value of a tag called STATUS is 0, the alarm will be issued.

Alarm Text

This section describes how to enter the alarm text in the *Alarm Definition* dialog, as shown on page 8-5.



The alarm text can include the following tokens:

@tagname	Replaces @tagname with the current tag value when the alarm is started.
@!tagname	Replaces @!tagname with the value of the tag that is force read from the PLC when the alarm is started.
@#tagname	Replaces @#tagname with the value retrieved from the block to which the tag belongs, if the block is fresh. If the tag does not belong to a block, the **@#** control will function the same as **@!**.

Note: The above 3 tagname tokens must be typed in lower case letters. Otherwise the system will not recognize them.

$TIME	The current time in Hours.Minutes.Seconds format. The value range is from 00.00.00 to 23.59.59.
$DATE	The current date in Day.Month.Year format. The value range is from 01.01.00 to 31.12.99.
$HOUR	The current hour. The value range is from 0 to 23.
$MINUTE	The current minute. The value range is from 0 to 59.
$SECOND	The current second. The value range is from 0 to 59.
$DAY	The current day. The value range is from 1 to 31.

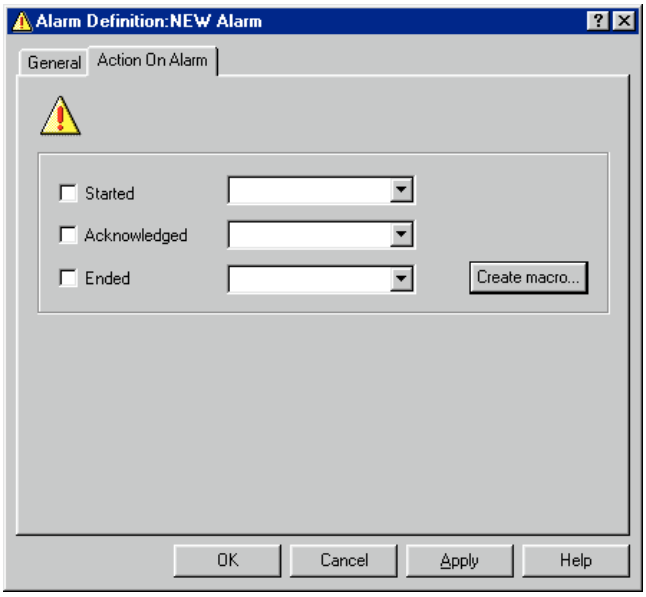
$MONTH	The current month. The value range is from 1 to 12.
$YEAR	The current year. The value range is from 00 to 99.
$WEEKDAY	The current day of the week. The value range is from 1 to 7, where 1 is Sunday and 7 is Saturday.
$OPERATOR	The current operator name. The value is a string that represents the operator name.
$GROUP	The groups associated with the current operator.
$INTIME	The number of minutes that passed since midnight. The value is used for tag comparison and definition. The value range is from 1 to 1439.
$INDATE	The number of days that passed since January 1, 1980. The value is used for tag comparison and definition. The value range is from 0 and on.

Defining Action on Alarm

You can define a single action for an alarm when it reaches one of three states: when it starts, when it is acknowledged and when it ends. When the alarm reaches the selected state, it will trigger a macro.

➤ **To define an action on alarm:**

In the *Alarm Definition* dialog, as appears on page 8-5, select the **Action on Alarm** tab to display the following dialog:



The following options are available:

Started — Enables you to define an action when the alarm starts. Click on the arrow on the right side of the field and select a macro, or click on the **Create Macro** button to display a dialog in which you can create a macro. Refer to *Chapter 21, Macros*, for more details about creating macros.

Acknowledged — Enables you to define an action when the alarm is acknowledged. Click on the arrow on the right side of the field and select a macro, or click on the **Create Macro** button to display a dialog in which you can create a macro.

Ended Enables you to define an action when the alarm ends. Click on the arrow on the right side of the field and select a macro, or click on the **Create Macro** button to display the *Macro Definitions* dialog in which you can create a macro.

Click the **Apply** button to apply your definitions.

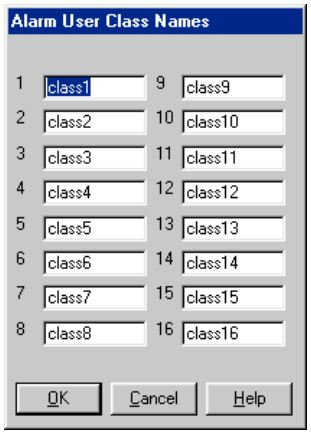
Assigning Names to Alarm Classes

Menu ⇨ Design / Class Names

This option is used to assign user-defined names to alarm classes. Alarm classes can be used to categorize alarms to identify them more easily, and to filter them in the system Events Summary.

➤ **To assign class names:**

From the *Design* menu, select **Class Names**. The *Alarm User Class Names* dialog is displayed:



The dialog displays 16 default class names. Double-click on the default name to select it, and enter the new name.

Alarm Properties

This section describes how to define alarm properties.

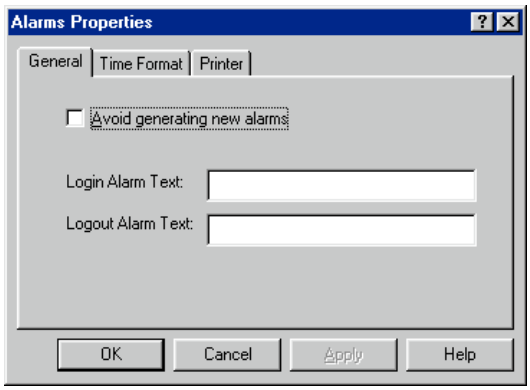
➤ **To define alarm properties:**

In the **All Containers** section of the Wizcon Application Studio, right-click **Alarms** and select **Properties** from the popup menu. The *Alarms Properties* dialog is displayed, in which you can:

- Specify the message which will appear when a user logs in and out, in the **General** tab, as described on the following page.
- Determine the time format that appears in the Events Summary and the alarm printout, in the **Time Format** tab, as described on page 8-17.
- Define how the alarm is printed, and overrides the default printer options with an escape sequence, in the **Printer** tab, as described on page 8-18.

Specifying a Login/Logout Message

You can specify a message that will appear when a user logs on and logs out in the **General** tab of the *Alarms Properties* dialog. (Refer to the previous page to see how to open the dialog).



The following options are available:

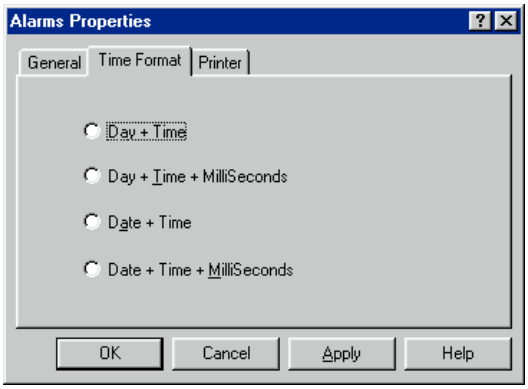
Avoid generating new alarms — Specifies that logins and logouts are not logged. Restart Wizcon for change to take effect.

Login Alarm Text — Specifies the text you want to appear when a user logs in. This change can be implemented online.

Logout Alarm Text — Specifies the text you want to appear when a user logs out. This change can be implemented online.

Determining a Time Format

You can choose between four different alarm time formats to determine the time format that will appear in the Events Summary and the Alarm printout, in the **Time Format** tab of the *Alarm Properties* dialog. (Refer to page 8-4 to see how to open the dialog).



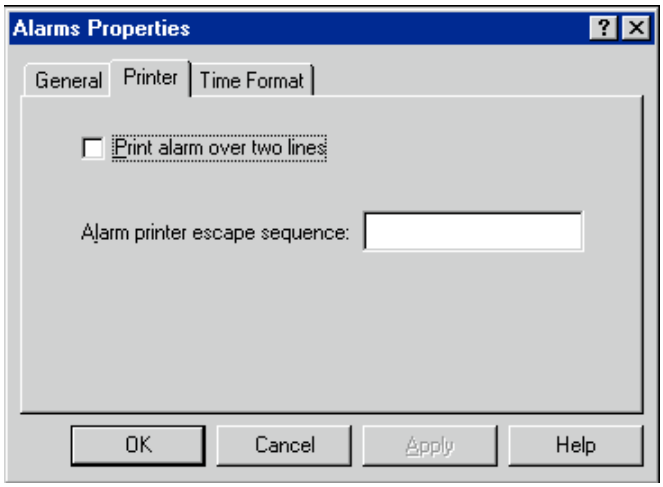
The following options are available:

Day + Time	Displays a time format of month, time.
Day + Time + MilliSeconds	Displays a time format of month, time plus milliseconds.
Date + Time	Displays the full date and time.
Date + Time + MilliSeconds	Displays the full date and time plus milliseconds.

Note: Restart Wizcon for changes to take effect.

Alarm Print Modes

You can define how the alarm is printed and override the default printer options with an escape sequence, in the **Printer** tab of the *Alarms Properties* dialog. (Refer to page 8-15 to see how to open the dialog).



The following options are available:

Print alarm over two lines — Enables you to print alarms in two lines of text. The first line will contain the WizPro title. Restart Wizcon for changes to take effect.

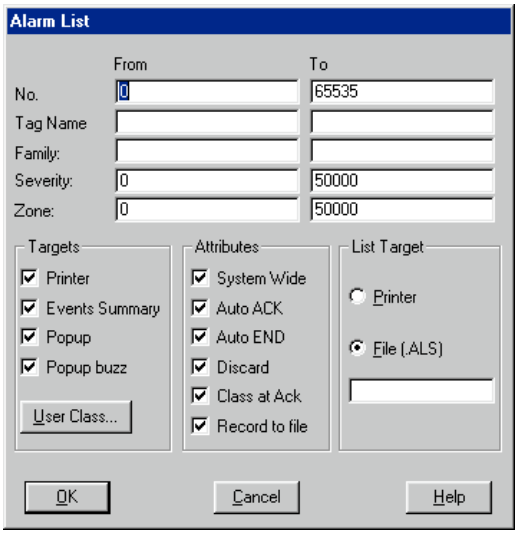
Alarm printer escape sequence — Enables you to override the default mode in which alarms are printed. For example, if you want alarm to appear in bold, enter the relevant printer escape sequence. (Refer to your printer user's guide for more details about escape sequences). Restart Wizcon for changes to take effect.

The **Export Alarms** option enables you to generate a list of alarms in ASCII format and send the list to the printer or a file. The generated list can also be filtered to include only specific alarms. The list is saved in ALS file format which is described in more detail on page 8-22.

Alarm lists can be generated and then edited using a text editor. Once generated, the list can be printed for project documentation. This is useful in large projects, where thousands of alarms must be defined. In this case, working with a text editor is faster than defining each alarm separately.

➤ **To generate a list of alarms:**

In the **All Containers** section of the Wizcon Application Studio, right-click **Alarms** and select **Export Alarms** from the popup menu. The *Alarm List* dialog appears:

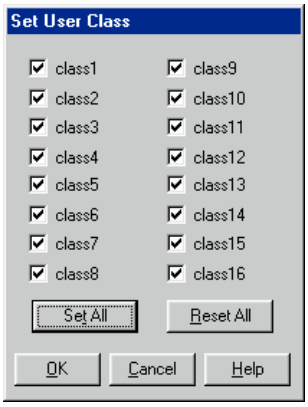


The dialog contains filter options that you can select to determine which alarms will appear in the list that you want to generate. Each filter field is optional (except for the filename in the **List Target** field, which must be specified if you select the **File** option).

The following options are available:

No.	Specifies the range of numbers of the alarms that you want to appear in the generated list.
Tag Name	Specifies the name, or name prefix range of the tags associated with the alarms that you want to appear in the generated list.
Family	Specifies the name or prefix of the family to which the alarm belongs that you want to appear in the generated list.
Severity	The severity range of the alarms that you want to appear in the generated list.
Zone	The zone range of the alarms that you want to appear in the generated list.
Targets	The target specifications of the alarms that you want to appear in the generated list (any, none, or all can be selected).

User Class Activate this button to select classes to filter the alarms that will appear in the generated list. After you activate this button, the *Set User Class* dialog appears:



You can select one or more classes, so that only the alarms that belong to those classes will appear in the generated list. Activate the **Set All** button to select all the classes. Activate the **Reset All** button to deselect all the classes.

Attributes The attribute specifications of the alarms that you want to appear in the generated list. You may select any attribute, all of the attributes, or none at all. These attributes are described on page 8-7.

List Target Specifies the target destination of the list to be generated: **Printer** or **File (.ALS)**. You can select **Printer** to send the list to the printer, or **File (.ALS)** to save the list in a file with the extension .ALS. For **File (.ALS)**, specify the name of the file without the extension. The file will be located in the application directory specified in the *Set Default Paths* dialog, which is described in *Printers* section in *Chapter 5, Getting to Know the Application Studio*.

An example of an ALS file is shown below.

After you complete the dialog and activate the **OK** button, an alarm list will be generated according to the filter you specified.

ALS File Format

This section describes the field definitions of an ALS file. An ALS file can be opened with any text editor.

The following is an example of an .ALS file:

```
;No. Tag Cond Value Text          Prt Ann Pop Buz Fil Sys AAc AEn Dis CIA Sev Zone Name Help UserClass AOS AOA

 0  T2  >   200 <Shutdown> N  N  N  N  N  N  N  N  N  N  0  0  < >   < >   0          Y   Exit

 1  T3  =   150 <Open 3>   N  Y  Y  N  N  Y  N  N  N  N  0  0  <MSG> < >   Admin
```

The format of the file is as follows:

The first line contains the alarm attribute fields. This line begins with a semicolon.

Each remaining line contains one alarm definition. The fields in the alarm definition lines are as follows:

No.	Specifies the alarm original number.
Tag	Specifies the name of the tag associated with the alarm.
Cond	Specifies the conditional operator of the alarm condition. (For possible values, see the section called *Alarm Condition Statements* earlier in this chapter.)
Value	Any numerical value for the alarm condition.
Text	The text that will appear when the alarm condition is true. The text appears in brackets < >.
Prt,Ann,Pop, **Buz,Fil**	These fields represent the target specification of the alarm. The value can be **Y** for Yes or **N** for No.
Sys,AAc,AEn, Dis,ClA	These fields represent the alarm attributes. The value can be **Y** for Yes or **N** for No.
Sev	Specifies the alarm severity from 0 (lowest level) to 50,000 (highest level).
Zone	Specifies the alarm zone number from 0 to 50,000.
Name	Specifies the alarm name (assigned in the alarm definition). The name appears in brackets <>.
Help	Specifies the name of the help file associated with the alarm (specified in the alarm definition). The name of the help file appears in brackets <>.
UserClass	Specifies the user class associated with the alarm. The value 0 represents no user class specification.
Action on Alarm	Specifies the name of the action macro which can be attached to each state of the alarm.

The **Import Alarms** option enables you to import alarm definitions from an ASCII file. You can use the imported ASCII file to replace the current list with the generated one, or append it to the current list of alarms.

➤ **To import alarm definitions:**

In the **All Containers** section of the Wizcon Application Studio, right-click **Alarms** and select **Import Alarms** from the popup menu. The *List to alarms* dialog appears:

This dialog lists existing alarm list files (.ALS).

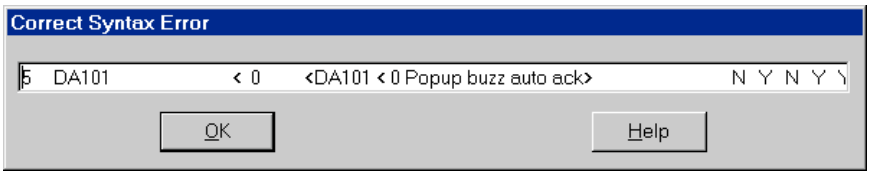
- To replace the current alarm list:

  Select a file and activate the **Replace** button. You are prompted to confirm the replacement.

- To append the alarm list to the current alarm list:

  Select a file and activate the **Append** button. The alarms in the file are appended to the end of the current list (in numerical order).

If an error exists in the .ALS file (incorrect syntax), when the file is being loaded to replace the current file, or appended to the current file, you will be prompted to optionally correct the error. If you want to correct the error, a dialog appears, as in the following example.



Alarm Help Files

Alarm Help files are user-created ASCII files that contain help messages. These messages appear on the screen when specific alarms are issued. Each file contains a description for its associated alarm.

Help files can be created using any text editor. Simply start a new file and type the desired message. Help files can have any name, but must have the extension **.AHP**. All help files should be placed in one directory.

You can specify the file name of the help file while defining an alarm, in the **General** tab of the *Alarm Definition* dialog, as described on page 8-5.

You can specify the file name of the help file for an existing alarm, by double-clicking on the alarm in the **List of Alarms** in the Wizcon Application Studio. The *Alarm Definition* dialog will open, in which you can define the path name of its help file.

Chapter 9
Events Summaries

For the Web refer to Chapter 10, Creating Events Summary Profiles.

About this chapter:

This chapter describes Wizcon's Events Summary, as follows:

Overview, on the following page, describes an overview of the Wizcon Events Summary features.

Defining and Modifying Events Summaries, page 9-3, describes how to define an Events Summary, how to close an Events Summary window, and how alarms are displayed in the Events Summary.

Display Options, page 9-7, describes which alarms will be displayed in the Events Summary, their order, how to assign alarms text and background colors, and how to view a list of alarms in historical and online mode.

Events Summary Operations, page 9-20, describes how to obtain information about specific alarms, acknowledge a single alarm or all alarms, terminate an alarm and record alarm messages.

Popup Events Summary, page 9-26, describes Popup Events Summaries, how to design them and to define their parameters, and how to make a Popup Events Summary buzz to indicate a severe warning.

Events Summary Properties, page 9-33, describes how to define Events Summary tuning parameters and Events Summary window attributes.

Overview

The Wizcon 7 *Events Summary* is a Wizcon 7 window in which alarms are displayed. Several Events Summaries may be created each with different types of alarm grouping, so that the operator will be able to identify the type of alarm according to the Events Summary. Alarms in the Events Summary can be classified according to several groups, and insignificant events and information can be masked for operator convenience.

Events Summaries can operate in one of two modes: Online or History.

- In the **Online** mode, only active alarms are listed.
- In the **History** mode, a historical list of alarms is shown in the Events Summary (according to the specified alarm filter) and can be directed to the screen, a file, or a printer.

The Events Summary can display alarms generated on any Wizcon station on the network. This way, an operator can see alarms of the same logical functional group from different parts of the controlled area.

This section describes how to define an Events Summary, as described below, and how to modify an existing Events Summary, as described on the following page.

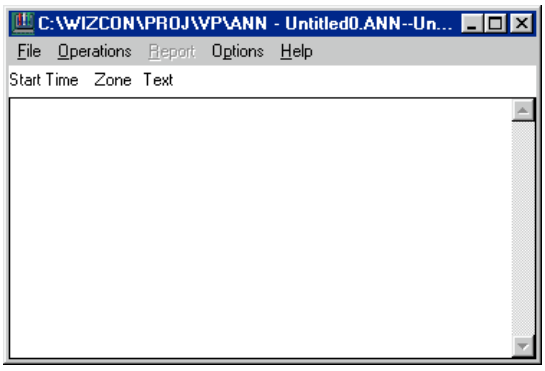
Note: You may want to refer to the Getting Started guide to see how to define an Events Summary in more detail.

➤ **To define an Events Summary:**

Click the **Events Summary** icon in the Wizcon Application Studio toolbar.

or,

In the All Containers section of the Wizcon Application Studio, right-click **Events Summaries** and select **New Events Summary** from the popup menu. The *Events Summary* window appears as follows:



The window contains a menu bar with the following options:

File	For filing operations.
Operations	To invoke alarm operations.

Report	To create and view alarm reports (in the **History** mode).
Options	To specify display parameters, such as sorting order and item colors.

The **Start Time**, **Zone** and **Text** are predetermined categories that display information determined when the alarm was defined. For more details, refer to the section on *General Alarm Definitions* in *Chapter 8, Alarms*.

➤ **To modify an Events Summary:**

Double-click on the Events Summary in the List of Events Summaries. The *Events Summary* dialog is displayed, as shown on the previous page, in which you can modify the Events Summary.

Exiting the Events Summary

Menu ⇨ File / Exit

➤ **To exit the Events Summary:**

Select **Exit** from the *File* menu, or double-click on the icon in the upper left corner of the *Events Summary* window.

Alarm Display

The Events Summary displays alarms according to a severity range, zone range, class, and name prefix. These are specified by the operator.

For example, the Events Summary can be instructed to display alarms with a severity level from 20 to 29, in zone 1-5 (floors 1 through 5 in a building), of classes 7 and 15 (doors and windows) with the name ROBBERY.

Alarms are displayed in the Events Summary based on the following parameters. These parameters are selected during alarm definition.

Select	To display
Start Time	The date and time the alarm was generated.
Ack Time	The time the alarm was acknowledged by the operator.
End Time	The time the alarm was terminated.
Severity	The severity of the alarm.
Text	The alarm message.
Zone	The area of the plant in which the alarm occurred.
Family	The name assigned to a specified group of alarms.
User	The identity of the operator who acknowledged the alarm (not in use).
Station Name	The station in which the alarm is displayed.

Remember, if an alarm is defined with both the **Auto Acknowledged** and **Auto End** options, it will be considered inactive and will not be displayed in an Events Summary.

Alarms are displayed in default colors, specified during Application Setup. Different colors for background and foreground (text) can be defined for each **Severity** range and **Zone**, but event time (**Start Time**, **Ack Time** and **End Time**) colors are assigned by the system and cannot be changed.

The event time colors are:

- **Start Time** Red
- **Ack Time** White
- **End Time** Green

If the **Ack Time** or **End Time** option is not being used, the event time colors are applied to the **Start Time** option, if used.

Display Options

Menu ⇨ Options

Alarms can belong to several classifications. The *Options* menu in the Events Summary window is used to determine which alarms will be displayed in the Events Summary and in what order, alarms text and background colors. It is also used to view a list of alarms in **historical** and **online** mode. The following display options are available:

Select	To do
Filter	Assign values to alarm classifications so that the Events Summary will display only the alarms that meet these specifications, as described on the following page.
Sort	Specify the categories and their order according to which the alarms will be sorted in the Events Summary, as described on page 9-10.
Display	Specify which alarm fields will be displayed in the Events Summary, as described on page 9-11.
Colors	Assign alarm text and background colors according to their severity level or zone, as described on page 9-13.
Online	Choose between **Online** mode for a list of alarms as they occur in the system, or **History** mode, for a list of historical alarms, as described on page 9-15.

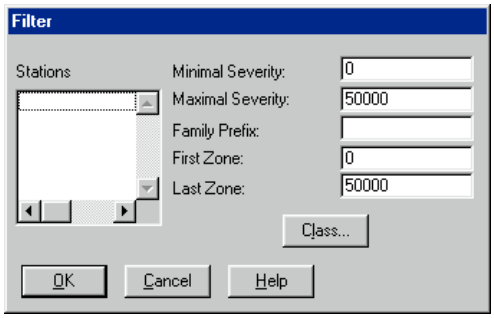
Alarm Filter

Menu ⇨ Options / Filter

The **Filter** option is used to assign values to each of the alarm classifications so that the Events Summary will display only the alarms that meet these specifications.

➤ **To set the alarm filter:**

Select **Filter** from the *Options* menu. The *Filter* dialog is displayed:



The following options are available:

Stations — Specifies a list of the active Wizcon stations. Select the stations from which you want to receive alarms in this Events Summary.

Minimal Severity — Minimal severity level for which alarms should be displayed.

Maximal Severity — Maximal severity level for which alarms should be displayed.

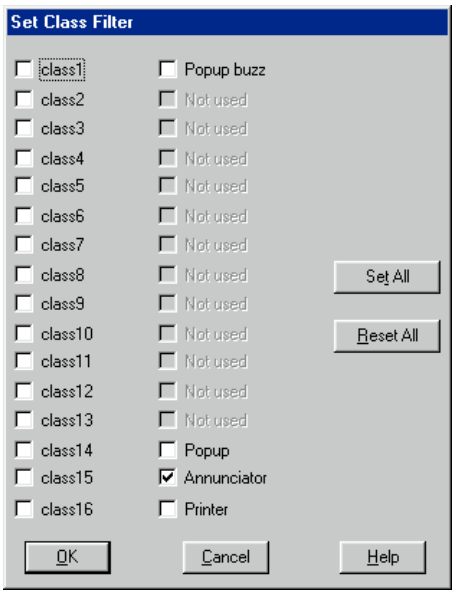
Family Prefix — Displays only those alarms with the specified family prefix. If you leave this field empty, alarms with any family prefix will be displayed.

First Zone Specifies the first zone value for which alarms should be displayed.

Last Zone Specifies the last zone value for which alarms should be displayed.

Note: All zones with a value between the first and last zone are included.

Class Specifies the alarm classes for which alarms should be displayed. When this button is activated, the *Set Class Filter* dialog is displayed:



In this dialog you can select alarm classes. Only the alarms that belong to at least one of the classes that you select will appear in the Events Summary.

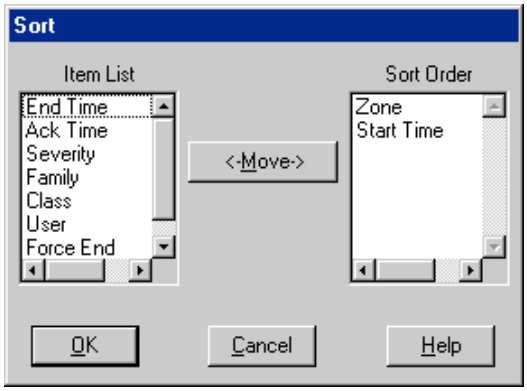
Alarm Sorting

Menu ⇨ Options / Sort

The **Sort** option is used to specify the categories and their order according to which the alarms will be sorted in the Events Summary.

➤ **To specify sort categories:**

Select the **Sort** item from the *Options* menu. The *Sort* dialog is displayed:



The following options are available:

Item List — Displays a list of sort categories which can be selected and moved to the **Sort Order** list for display in the Events Summary.

Sort Order — Specifies the sort categories in the order in which they are displayed in the Events Summary.

■ To display a sort category in the Events Summary:

Select the category in the **Item List** box and activate the **Move** button. The item is moved to the **Sort Orde**r box.

- To remove a sort category from the Events Summary:

  Select the category in the **Sort Order** box and activate the **Move** button. The category is moved to the **Item List** box.

Double-clicking an item causes that item to move to the other list.

Alarms are sorted in ascending order (1, 2, and so on), except for the severity level group, which is sorted in descending order (90, 89, and so on) so that the most severe alarms will be displayed at the beginning of the Events Summary list.

Note: Since you can only view a limited number of alarms in the Events Summary window, it is recommended to sort the alarms according to their severity.

- To change the display order of the categories:

  Move all the sort categories to the **Item List** box and place them back in the **Sort Order** box in the order in which you want them to appear in the Events Summary.

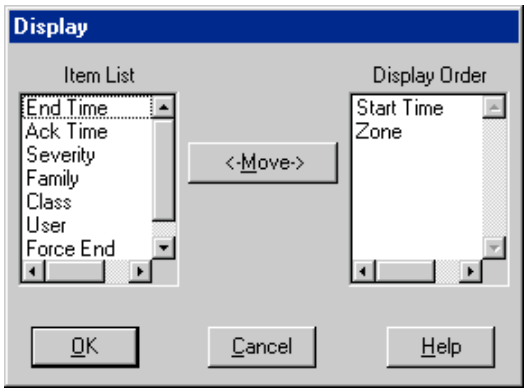
Alarm Display Setup

Menu ⇨ Options / Display

The **Display** option is used to specify which alarm components will be displayed in the Events Summary.

➤ **To specify which alarm components to display:**

Select the **Display** item from the *Options* menu. The *Display* dialog appears:



The following options are available:

Item List — Displays a list of display categories which can be selected and moved to the **Sort Order** list for display in the Events Summary.

Display Order — Specifies the display categories in the order in which they are displayed in the Events Summary.

- To show a display category in the Events Summary:

  Select the category in the **Item List** box and activate the **Move** button. The item is moved to the **Display Orde**r box.

- To remove a display category from the Events Summary:

  Select the category in the **Display Order** box and activate the **Move** button. The category is moved to the **Item List** box.

- To change the display order of the categories:

  Move all the display categories to the **Item List** box and place them back in the **Display Order** box in the order in which you want them to appear in the Events Summary.

Double-clicking an item causes that item to move to the other list.

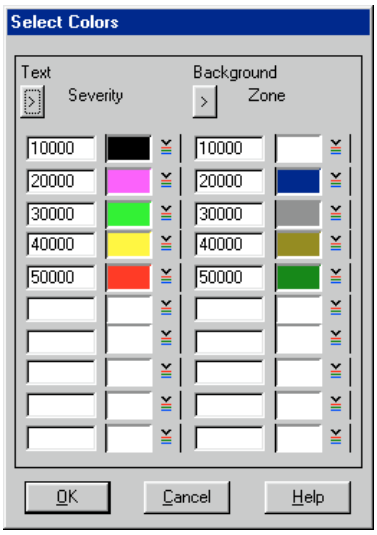
Alarm Colors

Menu ⇨ Options / Colors

The **Colors** option is used to assign alarm text and background colors according to their severity level or zone.

➤ **To assign colors:**

Select the **Colors** item from the *Options* menu. The following dialog appears:



The fields in this box are:

Text Arrow Button	Toggle button used to specify if the text color will be determined according to severity or zone values.
Background Arrow Button	Toggle button used to specify if the background color will be determined according to severity or zone values.
Text Value Column	Used to specify value ranges for text colors.
Background Value Column	Used to specify value ranges for background colors.
Colors	A color selection field appears beside each value field. To select a color for a specific value, click on the small arrow to the right of the color field and select the color you want for that value.

Click on the toggle arrow in a column to select **Severity** or **Zone** as the column title. Then specify the values in each column and select the desired color for each value.

For example, suppose you specified the following values:

- The left arrow button is toggled to **Severity**.
- The right arrow button is toggled to **Zone**.
- The value in the first value line for both columns is **50**.
- The value in the second value line for both columns is **100**.
- All the other lines are empty.
- The colors for the first line are **white** for text, and **black** for Background.
- The colors for the second line are **green** for text, and **blue** for Background.

The alarms will be displayed as follows:

- The text for alarms with a Severity level between 1 and 50 will appear in white. The text for alarms with a Severity level between 51 and 100, will appear in green.
- The background color for all alarms with a Zone between 1 and 50 will appear in black. The background color for all alarms with a Zone between 51 and 100 will appear in blue.

History/Online Mode

Menu ⇨ Options / Online

This option is used to select the **Online** mode for a list of alarms as they occur in the system, or the **History** mode, for a list of historical alarms.

To toggle the Events Summary mode, select **Online** from the *Options* menu. When the **Online** mode is not active (no check appears beside the item), the **History** mode is active.

Selecting the **History** mode enables the Report menu from which you can:

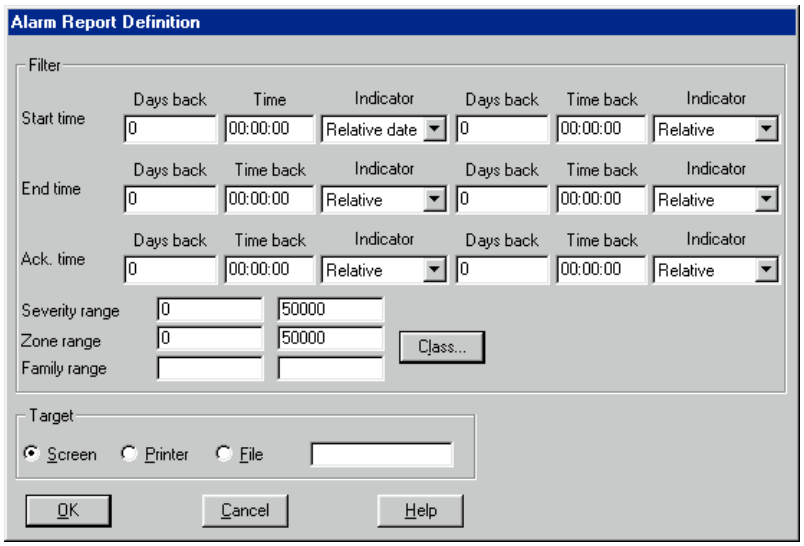
- Configure alarm reports with special filters, as described on the following page.
- Specify the directory from which Wizcon 7 will extract the historical alarm data, as described on page 9-19.

Note: Alarms must be defined as Record to File to be used in the History mode.

You can configure alarm reports with special filters, as described below:

➤ **To configure alarm reports:**

Select **Design** from the *Report* menu. The *Alarm Report Definition* dialog is displayed:



The following options are available:

*Note: Where two sets of columns appear in a field, the first set is used for **From** values and the second for **To** values.*

Start time Specifies the range of date and time for the alarm start time that will appear in the report:

Indicator: Indicates whether the date and time is absolute or relative. Click inside the field to display the following options:

Absolute: The exact time you specify. For example, if you specify the date 08-05-96, and the time 15:00:00, alarms will be listed from 3 PM on August 5, 1997.

Relative: The time and date that you specify will be relative to the current time and date. For example, for time 10:00:00 and date 3, alarms will be listed from 3 days and 10 hours ago.

Relative Date: Only the date that you specify will be relative to the current date (the time will remain absolute). For example, for time 10:00:00 and date 3, alarms will be listed from 3 days ago, at 10 AM.

End Time — Specifies the range of date and time for the alarm end time. Only alarms that ended in this date and time range will appear in the report. The options you can select for **Indicator** are the same as those for the **Start Time** field described above.

Ack Time — Specifies the range of date and time for the alarm acknowledge-time. Only alarms that were acknowledged in this date and time range will appear in the report. The options you can select for **Indicator** are the same as those for the **Start Time** field described above.

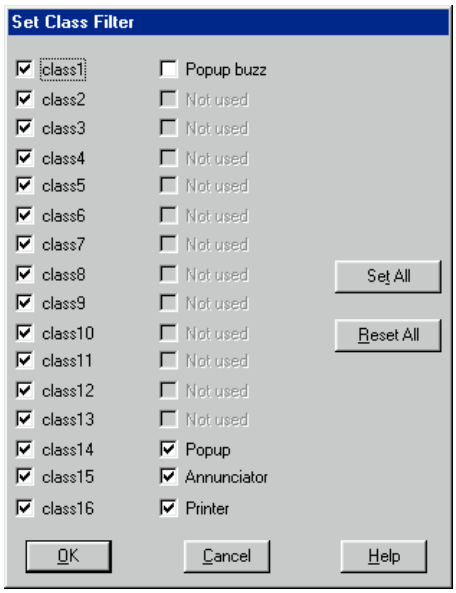
Severity Range — Specifies the range of severity levels of the alarms that you want to appear in the report.

Zone Range — Specifies the range of zones of the alarms that you want to appear in the report.

Family Range — Specifies the range of family prefixes of the alarms that you want to appear in the report.

Class

Activate this button to select alarm classes so that only the alarms that belong to one of those classes will appear in the report. The *Set Class Filter* dialog is displayed:



Select the alarm classes you want, and click **OK**. To select all the classes in the box, activate the **Set All** button. To de-select all the classes in the box, activate the **Reset All** button.

Target

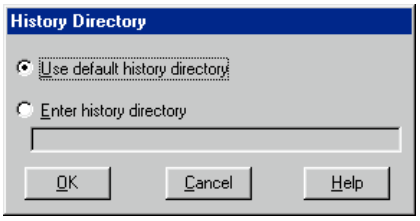
In this field, specify the target of the alarm report to be generated. If you select **File**, specify the name of the file that you want the report to be written to.

Specifying a Directory for the Historical Alarm Data

You can specify the directory from which Wizcon 7 will extract historical alarm data.

➤ **To specify a directory:**

Select **Alarms history directory** from the *Report* menu. The *History Directory* dialog is displayed, in which you can either specify the path of the directory in which the historical data file is located, or select the **Use default history directory** option.



The default directory is that specified in the *Set Default Paths* dialog for the **Alarm History** field. For more details about setting default paths, refer to the *Defining System Options* section *Chapter 5, Getting to Know the Application Studio*.

Menu ⇨ Operations

When alarms are displayed in an Events Summary, you can obtain information about a specific alarm, acknowledge a single alarm or all alarms, terminate an alarm and enter alarm messages.

The following options are available in the *Options* menu of the Events Summary window.

Select	To do
Assist	Obtain information about specific alarms, as described on the following page.
Ack Selected	Acknowledge the selected alarms, as described on page 9-22.
Ack All	Acknowledge all the displayed alarms, as described on page 9-22.
Force End	Terminate selected alarms, as described on page 9-23.
Message	Record alarm messages, as described on page 9-23.

To perform any operation on alarms in an Events Summary (except for **Ack All**), the alarm must first be selected. When an alarm is selected, it appears in a light gray color. Selecting an alarm again will cancel the initial selection.

Alarms that were changed, added, or deleted, will be sorted immediately into their proper locations.

Note: Events Summary operations can be performed only by operators authorized for the Events Summary menu items. Authorization is defined during Application Setup.

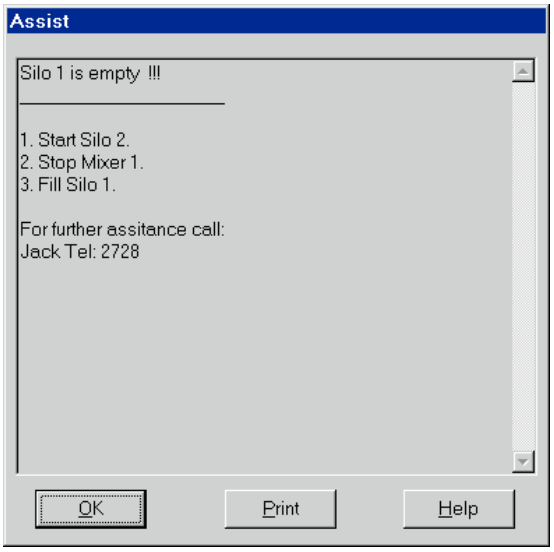
Assist

Menu ⇨ Operations / Assist

This operation enables the operator to obtain information about specific alarms.

➤ **To obtain alarm information:**

Select an alarm in the Events Summary, and then select **Assist** in the *Operations* menu. The *Assist* dialog is displayed, in which assistance such as operator instructions for the handling of the alarm, is displayed.



Assist information is taken from alarm Help files. For more details about creating Help files, refer to *Chapter 8, Alarms*.

Note that alarm assistance can also be obtained by double-clicking on any alarm (for which a Help file exists) in the Events Summary.

To print the alarm Help text, activate the **Print** button.

Alarm Acknowledge

Menu ⇨ Operations / Ack Selected

When alarms in the Events Summary are selected, specifying the **Ack Selected** item from the **Operations** menu will acknowledge the alarms. If the Acknowledge Time (Ack) appears, the current time will be displayed in white. If the Ack column is sorted, the order of the alarms will change accordingly.

If the **ACK** value was specified for the ANN_DOUBLE_CLICK parameter in the WIZTUNE.DAT file, an alarm can also be acknowledged by double-clicking the alarm For more details about Tuning parameters, refer to *Appendix C, Tuning Parameters*.

Remember, alarms that are Acknowledged and Ended will not appear in the Events Summary.

Total Acknowledge

Menu ⇨ Operations / Ack All

You can acknowledge all the alarms in the Events Summary.

➤ **To acknowledge all the alarms in the Events Summary:**

Select **Ack All** from the *Operations* menu. Alarms defined with the **Class-at-Ack** option are displayed one by one, showing the *Set User Class* dialog in which you can assign a class to each alarm.

*Note: Formerly, it was not possible to assign a New User Class to alarms after the **Ack All** option was selected.*

If **Acknowledge Time** (Ack) appears in the Events Summary, the current time will be displayed in white.

If more than 500 alarms appear in the Events Summary, only the first 500 will be acknowledged.

You can display the name of the station from which the alarm was generated. The station name can also be used as a sort parameter.

End Alarm

Menu ⇨ Operations / Force End

This operation is used to force alarms to end. This is useful to remove alarms that cannot be ended due to communication or equipment modifications, or other causes. An alarm that was force ended will be removed from the Events Summary.

➤ **To force alarms to end:**

Select the alarms you want to force to end from the list in the Events Summary and select **Force End** from the *Operations* menu. The selected alarms will be terminated.

If **End** appears in the Events Summary, the current time will be displayed in green.

Operator-Initiated Messages

Menu ⇨ Operations / Message

This operation is used by the operator to spontaneously record alarm messages in the system. This enables the operator to immediately record special activities or outstanding events.

The operator can also overwrite an existing operator message (entered manually or automatically), and also view the edited message, as described on the following page. This option can be used, for example, to record only part of an on-going process for display, or to modify a message to meet a particular requirement.

All messages, whether entered manually or automatically, are recorded and can be retrieved.

➤ **To record a new alarm message:**

Select **Message** from the *Operations* menu. The *Message* dialog is displayed in which you can enter a message.

Alarms that are entered manually are assigned the default severity level 0, and the name **MSGn**, where **n** stands for the number of the alarm in the order of manually-entered alarms (MSG1, MSG2, etc.). Manually-entered alarms are always acknowledged. You can also edit a message and view the edited text, as described on the following page.

➤ **To edit an existing message:**

Select a message from the list in the Events Summary, then select **Message** from the *Operations* menu and change the text.

➤ **To view the changes made to the message:**

Select the message in the Events Summary and then select **Assist** from the *Operations* menu.

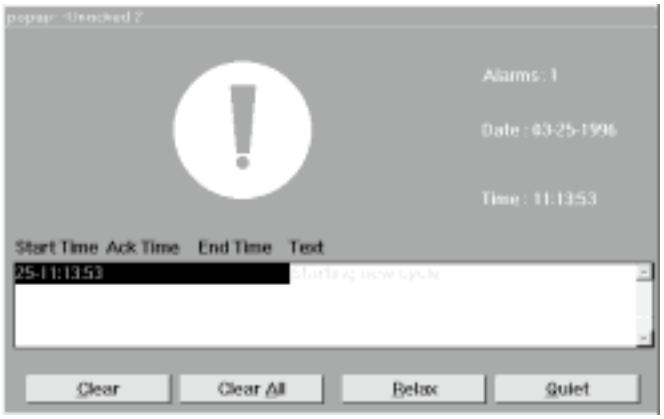
Note: Using the above options, you cannot change the text of system alarms (alarms defined by selecting Alarms from the Design menu in the Wizcon Studio Application, or by right-clicking Alarms in the All Containers section of the Wizcon Application Studio).

Remember: An assistance file (.AHP) is generated for each operator message. This file contains all the operator message text except for the latest message entry.

Popup Events Summary

The **Popup Events Summary** is an Events Summary that appears on the screen whenever a severe alarm occurs. As you define each alarm you can specify whether the alarm will appear in a Popup Events Summary or in an Events Summary. In addition, the operator can filter the alarms that will appear in the Popup Events Summary.

This section describes how to use a Popup Events Summary. Designing Popup Events Summaries, is described on page 9-28. The following is an example of a Popup Events Summary:



The following alarm information is displayed:

Alarms	The number of alarms that appear in the Popup.
Date	The Popup activation date.
Time	The Popup activation time.
Alarm List	A list of the active alarms in the Popup.

The following options are available:

Clear	Clears the selected alarm from the Popup.
Clear All	Clears all the alarms from the Popup. When this button is activated, the Popup Events Summary will automatically disappear from the screen.
Relax	Clears the Popup Events Summary from the screen for a pre-defined period of time.
Quiet	Disables the Popup buzz feature for a predefined period of time.

Note the following:

- When the **Clear** button is activated and the alarm is removed from the Popup, the alarm's End or Ack status will not be affected.
- When a Popup is activated (whenever an alarm becomes active) and appears on the screen, you will not be able to perform any system function until the Popup disappears. This is meant to draw the operator's attention to serious alarms. The Popup will disappear only when all the alarms in the list are cleared (either one at a time or all together). However, the operator can cause the Popup to disappear temporarily by activating the **Relax** button.
- The amount of time the Popup will be relaxed and silenced is specified during the Popup design procedure, on the next page.
- In the Popup example above, an eight-star marker appears to the left of the alarm line. This marker indicates the alarm that is causing the current buzz.

Designing Popup Events Summaries

Menu ⇨ Design / PopUp Settings

Popup Events Summaries are designed in the Wizcon Application Studio.

➤ **To design a Popup Events Summary:**

Select **PopUp Settings** from the *Design* menu in the Wizcon Application Studio. A Popup menu appears with the following options: **Filter**, **Sort**, **Display**, **Color**, **Buzz** and **Options**. These items share the same functions as the Events Summary (described in the section on *Display Options*, on page 9-7), except for:

- **Options**, in which you can set several Popup Events Summary parameters, as described below.
- **Buzz**, in which you can determine that the Popup Events Summary will buzz to attract the operator's attention, as described on page 9-30.

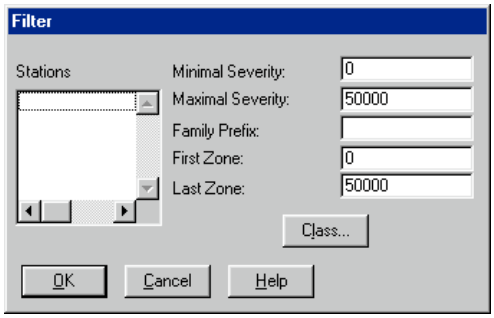
Setting Popup Events Summary Parameters

Menu ⇨ PopUp Settings/ Options

The **Options** item is used to set several Popup Events Summary parameters, such as the relax time, the Popup title, and the amount of lines the Popup will include.

➤ To set the Popup parameters

From the *Design* menu, point to **PopUp Settings** and select **Options** from the Popup menu. The *Filter* dialog is displayed:



The following options are available:

List Length	Specifies the number of lines in the list.
Relax Time	Specifies in how many seconds the Popup will disappear from the screen when the **Relax** button is activated, and the amount of time the Popup buzz will be silenced when the **Quiet** button is activated.
Pos	Specifies the X and Y position coordinates of the Popup on the screen.
Size	Specifies the X (width) and Y (length) Popup size values.
Title Bar	Displays the Popup title bar in the Popup.
Show Old Alarms	Displays old alarms together with new, active alarms.
Title Text	Specifies the title that will appear in the Popup title bar.

Test	Test the Popup specifications you selected (position, title bar, and so on.). After you activate this button, a Popup will immediately appear with an alarm called **Popup testing**. You can activate any of the buttons in the test Popup, just as when it appears on the screen in an application. The **Clear**, **Clear All**, **Relax**, and **Quiet** buttons retain their normal functions.

Popup Events Summary Buzz

Menu ⇨ PopUp Settings/ Buzz

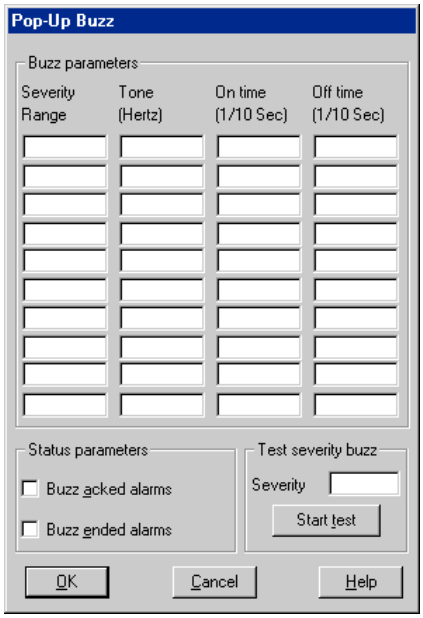
The Popup Events Summary can be defined to buzz. This feature can be used to call the operator's attention to the screen and indicate a severe warning.

The buzz will be determined according to the alarm's severity, and different buzzes can be defined for different severity ranges. The Popup will buzz according to the parameters of the alarm with the highest severity.

Note: Only alarms that belong to a new class called Popup Buzz will be able to cause the Popup to buzz.

➤ **To define the buzz parameters:**

From the *Design* menu, point to **PopUp Settings** and select **Buzz** from the Popup menu. The *Pop Up Buzz* dialog is displayed:



The following options are available:

Buzz Parameters

The following parameters are available:

Severity: Specifies the severity range for which the other parameters in this line will be relevant.

The severity range will include all the severity levels greater than the one defined in the previous line, up to and including this severity.

Tone: Specifies the buzz tone for a severity range. The value is in Hertz, and can be from 37 to 32,767 (system limitation).

On Time: Specifies the amount of time in 1/10 seconds that the Popup will buzz for a specific severity range.

If you specify 0, no buzzing will occur for that severity range. This may be useful if you want to de-activate the buzzing for all alarms within a specific severity range.

Note: It is recommended to specify short On-Time, up to 20 seconds, because this action uses large computer resources and slows the system.

Off Time: Specifies the amount of time in 1/10 seconds that the Popup will be silent between buzzes.

Status Parameters: The following options are available:

Buzz Acked Alarms: Select this option if you want the buzz to operate on alarms that were defined to buzz, even if they were acknowledged.

Buzz Ended Alarms Enables the buzz to operate on alarms that were defined to buzz, even if they were ended.

Test Severity Buzz **The following options are available:**

Severity: Specifies a severity number to test how the Popup will buzz for that severity.

Start Test: Starts the buzz test. A buzz will sound according to the parameters you defined in the dialog. When the buzz is operating, the **Start Test** button will change to the **Stop Test** button. You can activate this button to terminate the test.

Note: In the Popup, the alarms causing the current buzzing will be marked by a small eight-star marker in the left margin of the line that contains the alarm.

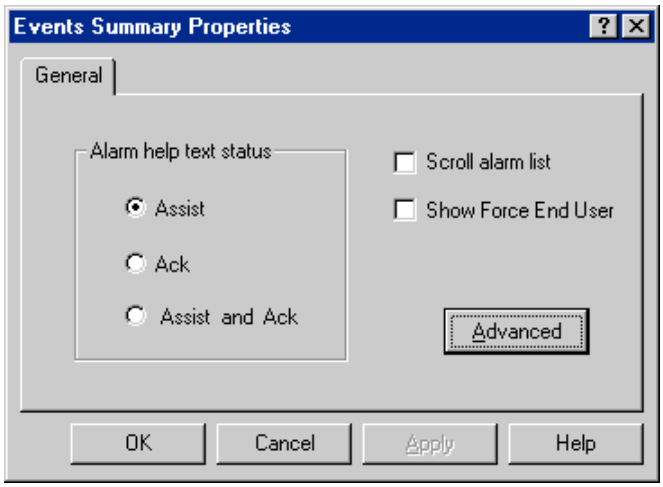
This section describes how to define Events Summary tuning parameters, as described below, and Events Summary window attributes, as described on page 9-35.

Events Summary Tuning Parameters

You can define Events Summary tuning parameters for alarm Help text and for the alarm list.

➤ **To define Events Summary properties:**

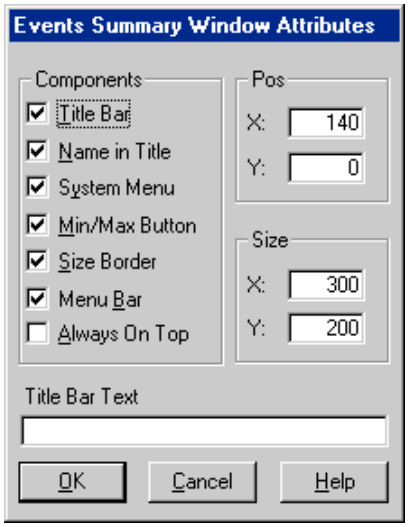
From the All Containers section of the Wizcon Application Studio, right-click on **Events Summaries** and select **Properties** from the Popup menu. The *Events Summaries Properties* dialog is displayed:



The following options are available:

Alarm help text status	The following options are available: **Assist**: Enables the user to obtain alarm help text from alarm Help files. **Ack**: Acknowledges alarms. **Assist and Ack**: Enables both the Assist and Ack options. This change can be implemented online.
Scroll alarm list	Enables the Events Summary to scroll and display alarms in the top of the list. If this option is checked, this parameter determines that when a new alarm arrives the Events Summary automatically scrolls to show the top alarms in the list. This ensures that if the new alarm is important, it will not be missed because the operator scrolled the list too far. Restart Wizcon 7 for changes to take effect.
Show Force End User	Implements the *Force End* field which helps the user to know whether the name that appears in the *User* field is the name of the person who ended or acknowledged the Alarm.
Advanced	Defines Events Summary window attributes, as described on the following page.

Activate the **Advanced** button in the *Events Summaries Properties* dialog, as shown on the previous page, to define default Events Summary window attributes.



The following options are available:

Title Bar — Specifies that a title bar appears at the top of the window.

Name in Title — Specifies that the name of the window will appear in the title bar.

System Menu — Specifies that a menu appears when you click on the icon in the top left corner of the window. This menu contains items that can be used to manipulate windows, such as move, size, close and so on.

Min/Max Button	Specifies that a **Minimize** and **Maximize** button appear in the top right corner of the window. These buttons can be used to minimize or maximize the window to predetermined sizes.
Size Border	Enables window borders that can be dragged to change the window size.
Menu Bar	Specifies that a menu bar appears in the window.
Always on Top	Select to display the Events Summary window on top of other open applications.
Pos	Specifies the window X and Y position coordinates in pixels.
Size	Specifies the window size in pixels.
Title Bar Text	Specifies the text that will appear in the Title bar.

Chapter 10
Creating Events Summary Profiles

About this chapter:

This chapter describes the Events Summary Profile, that contains the definitions that determine the way alarms are displayed in a browser. It also describes how to create an Events Summary Viewer, an HTML page that features real-time monitoring of alarms, as follows:

Overview, on the following page, describes an overview of the Wizcon Events Summary Profile and Events Summary Viewer features.

Defining and Modifying Events Summary Profiles, page 10-5, describes how to define which alarms will be displayed in the Events Summary, their order, how to assign alarms text and background colors.

Creating Events Summary Viewers, page 10-13, describes how to create an Events Summary Viewer by generating an HTML page from the Events Summary.

Changing the Default Location of Events Summary Profile Files, page 10-16, describes how to change the location of Events Summary Profile files.

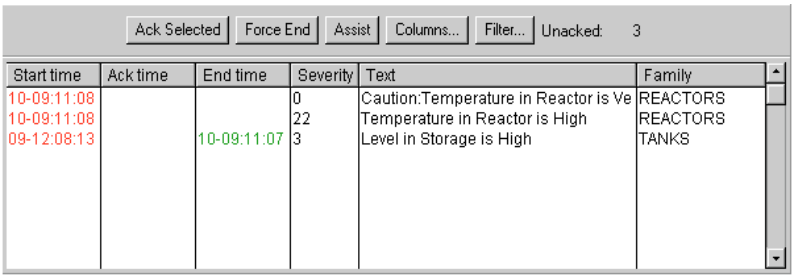
The Wizcon for Internet system enables real-time monitoring of alarms.

Events Summary Profile

First, you create an Events Summary Profile that contains the definitions that determine the way alarms are displayed in a browser. For example you can set filter conditions so that only those alarms that meet certain conditions are displayed.

Events Summary Viewer

An Events Summary Viewer features real-time monitoring of alarms according to the definitions specified in the Events Summary Profile. The picture below is an example of an Events Summary Viewer,



Interacting with the Events Summary Viewer

Alarms are displayed according to parameters specified in the Events Summary Profile. In the example above, alarm information is displayed in the following columns: Start time, Ack time, End time, Severity, Text and Family. An operator can click a column heading to sort the information displayed in the column according to ascending or descending order.

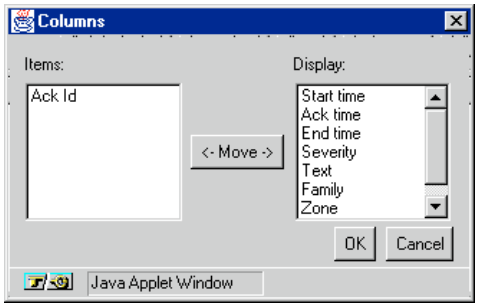
The Events Summary contains the following options that the operator can select:

Ack Selected Acknowledges selected alarms, and removes them from the alarm display.

Force End Force ends displayed alarms. The time the alarm is ended is then displayed in the End time column.

Assist

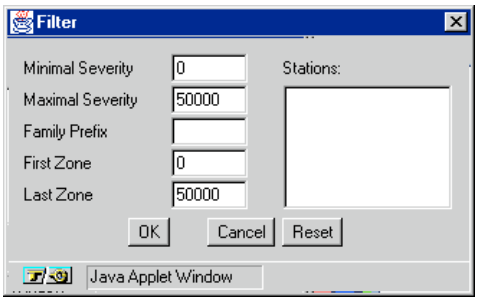
Columns Displays the following window in which an operator can select which columns are displayed in the Events Summary.



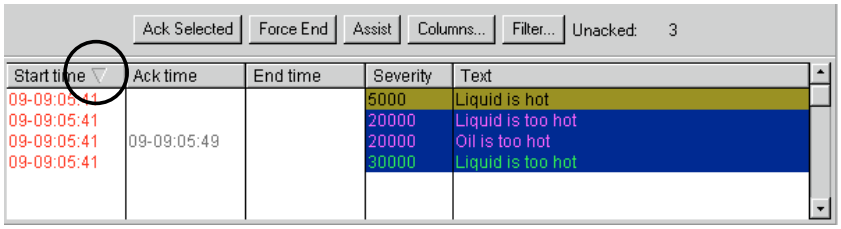
The columns that appear in the Display list on the right are those that are displayed in the Events Summary. To move a column from the Items list, on the left to the Display list and vice versa, select the column and click the **Move** button.

Filter

Displays the following window in which an operator can specify alarm filters.



When a column heading is clicked, a downward pointing arrow appears in the heading, which sorts the column information in descending order. Click the column again to display the information in ascending order. The arrow changes to an upward pointing arrow.



The width and the height of the columns are determined when generating the HTML page, as described on page 10-15.

This section describes how to define an Events Summary Profile, as described below, and how to modify an existing Events Summary Profile, as described on the following page.

Note: You may want to refer to the Getting Started guide to see how to define an Events Summary Profile in more detail.

➤ **To define an Events Summary Profile:**

Click the **New Events Summary** icon in the Wizcon Application Studio toolbar.

or,

In the All Containers section of the Wizcon Application Studio, right-click **Events Summary Profiles** and select **New Profile** from the popup menu. The *Events Summary Profile* dialog is displayed in which you can:

- Filter alarms in the **Alarm Filter** tab, as described on the following page.
- Define how alarms will be displayed in the **Define** tab, as described on page 10-7.
- Set the features you want to be enabled or disabled for the operator in the **Features** tab, as described on page 10-10.
- Assign text and background colors according to the alarm's severity level or zone in the **Color** tab, as described on page 10-11.

➤ **To modify an Events Summary:**

1. In the All Containers section, click **Events Summary Profiles**. The existing Events Summary Profiles are displayed in the List of Events Summary Profiles.
2. Double-click the Events Summary Profile you want to modify. The *Events Summary Profile* dialog is displayed, as shown on the following page, in which you can modify the current definitions.

➤ **To insert an Events Summary Profile:**

In the All Containers section, right-click **Events Summary Profile** and select **Insert Profile** from the popup menu. The *Import File* dialog is displayed in which you can select a predefined Events Summary Profile and add it to the current application.

Filtering Alarms

The **Alarm** filter tab enables you to set filter conditions for alarms. Only the alarms that meet these conditions are displayed in the Events Summary Profile.

The following options are available:

Stations	Specifies a list of Wizcon stations from which alarms will be displayed in the Events Summary.
Minimum Severity	Specifies the minimal alarm severity to be included in the Events Summary.
Maximum Severity	Specifies the maximum alarm severity to be included in the Events Summary.
Family Prefix	Specifies the first letters of the alarm families to be included in the Events Summary.
First Zone	Specifies the lower limit of the zone range to be included in the Events Summary.
Last Zone	Specifies the upper limit of the zone range to be included in the Events Summary.

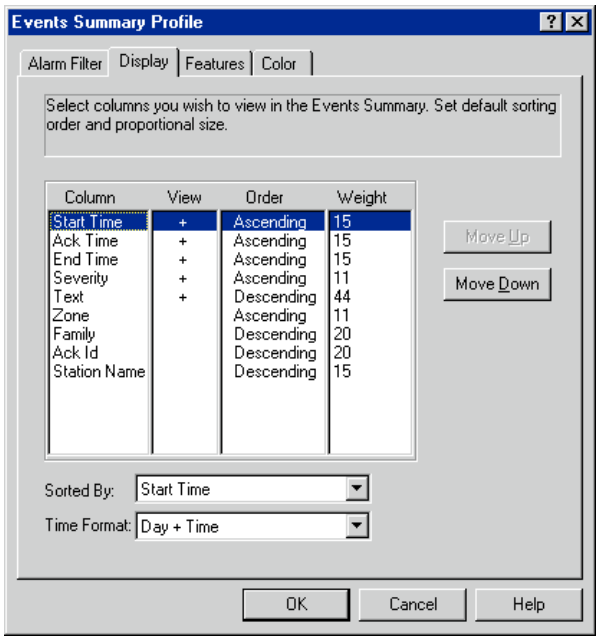
Defining Alarm Display

The **Display** tab enables you to determine which of the parameters selected during alarm definition is actually displayed in the Events Summary Profile. You can also determine the width of each column.

The operator can then adjust the default display, resize columns and change alarm sorting at run time.

Note: If an alarm is defined with both the Auto Acknowledged and Auto End options, it will be considered inactive and will not be displayed in an Events Summary Profile.

The **Display** tab contains four columns in which display options are determined, as shown below:



The following options are available:

Column — Displays the available alarm parameters such as Start time and End time. A parameter is selected/deselected for display by double-clicking inside the View column.

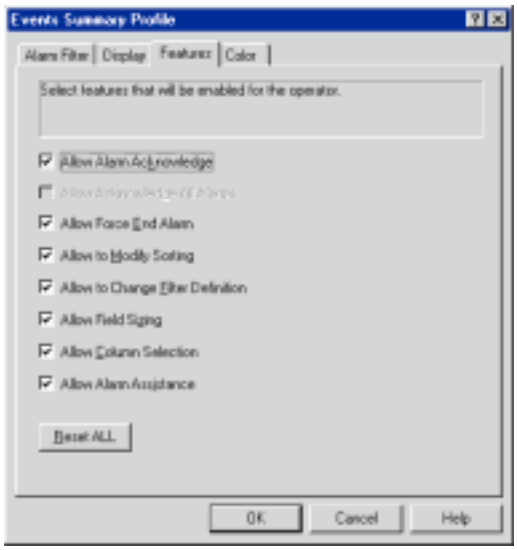
View — Specifies which alarm parameters are displayed in the Events Summary Profile. Double-click inside the column, along side the required parameters to select or deselect the parameters. A plus sign (+) indicates that the parameters is selected.

Order	Specifies the order of the alarms in ascending or descending order. Double-clicking in the column along side the required parameters toggles it between ascending and descending.
Weight	Specifies the amount of space designated to a column in relation to the entire Events Summary. Double-clicking in the column along side the required parameters, displays the *Update Weight Value* dialog. You can then enter a new value in the **Value** field, or click the up or down arrow to the right of the field until the required value is displayed.
Move Up / Down	Specifies the position of the parameters in the Events Summary. To move a parameter, click on a parameter to select it and click the **Move Up** or **Move Down** button. The selected parameter will move up or down one place in the list.
Sorted By	Specifies the default sort order of the alarms. Click in the field and select a sort order from the drop-down list. For example, End Time.
Time Format	Specifies the alarm time format. Click in the field and select a time format option from the drop-down list.

An example of an Events Summary with the Start time, Ack time, End time, Severity, Text and Family parameters selected is shown on page 10-2.

Enabling/Disabling Features

The **Features** tab enables you to determine operator options, such as whether or not an operator can resize a column.



The following options are available:

Allow Alarm Acknowledge

Allow Force End Alarm

Allow to Modify Sorting

Allow to Change Filter Definition

Allow Field Sizing

Allow Column Selection

Allow Alarm Assistance

Click the check box to left of an option to deselect an option. The check mark is removed. Click the check box again to enable the option.

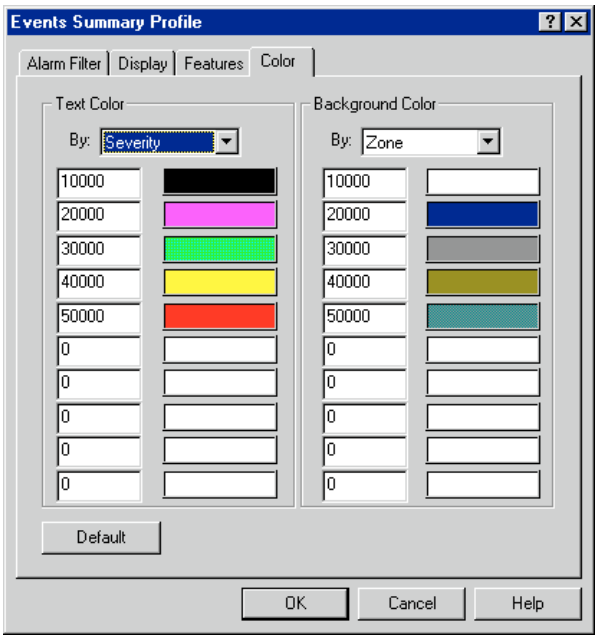
Click the **Reset ALL** button to disable all options.

Assigning Alarm Text and Background Colors

Separate colors can be assigned for alarm text and background in the **Colors** tab. Specifying different colors for different types of alarms enable each alarm to be distinguished and categorized more easily.

Different colors for background and foreground (text) can be defined for each **Severity** range and **Zone**.

Note: Event time (Start Time, Ack Time and End Time) colors are assigned by the system and cannot be changed.



The dialog displays two columns: one for text color on the left and the other for background color on the right. Each column enables you to determine color according to the alarm Severity or Zone.

- To assign text/background color to an alarm according to its severity or zone:

    1. In the text/background column select the Severity or Zone option from the **By** field.
    2. Enter the maximal value for the severity or zone in the numerical entry field.
    3. Click the color box to the right of the entry field to display a color box in which you can select a color for this maximal value.
    4. Press **OK** to activate and to close the dialog.

Alarms with severity or zone (according to the selection) below or equal to the entered maximum value will be displayed using the selected color.

If the **Ack Time** or **End Time** option is not being used, the event time colors are applied to the **Start Time** option, if used.

Creating Events Summary Viewers

An Events Summary Viewer displays alarms generated in the Wizcon system according to definitions specified in an Events Summary Profile.

Events Summary Viewers are created by generating an HTML page from the Events Summary Profile, in the Wizcon system, and publishing the resulting page on the Web.

This section describes how to generate a single HTML page that contains the Trend Viewer. For details on generating a single HTML page that contains two or more objects, refer to *Chapter 15, Generating HTML Pages*.

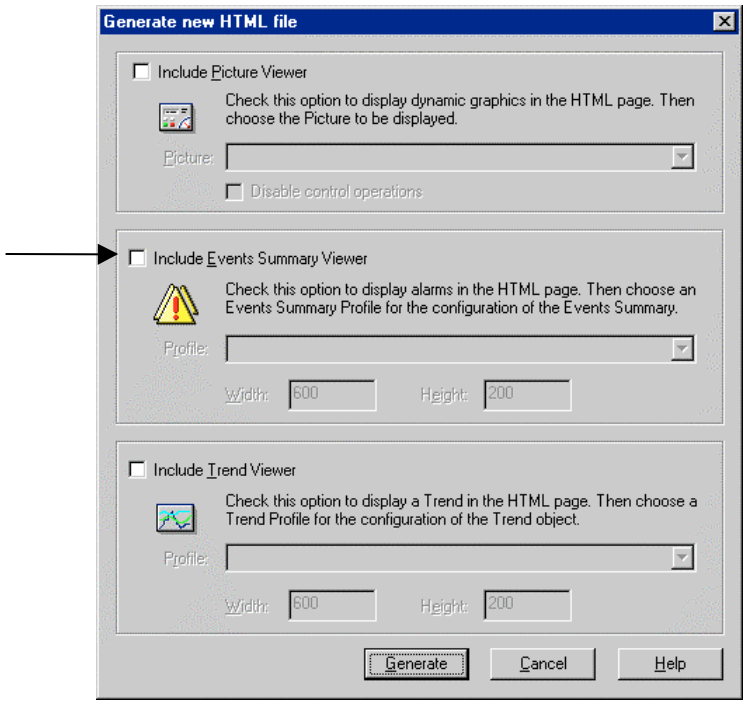
For more details about publishing, refer to *Chapter 15, Generating HTML Pages*.

➤ **To create an Events Summary Viewer:**

1. Click the **New HTML File** icon in the toolbar.

   or,

   From the All Containers section of the Wizcon Application Studio, right-click **HTML** and select **New HTML File** from the pop-up menu. The *Generate new HTML file* dialog is displayed:


Generate new HTML file
Include Picture Viewer
Check this option to display dynamic graphics in the HTML page. Then choose the Picture to be displayed.
Picture:
Disable control operations
Include Events Summary Viewer
Check this option to display alarms in the HTML page. Then choose an Events Summary Profile for the configuration of the Events Summary.
Profile:
Width: 600
Height: 200
Include Trend Viewer
Check this option to display a Trend in the HTML page. Then choose a Trend Profile for the configuration of the Trend object.
Profile:
Width: 600
Height: 200
Generate
Cancel
Help

   The dialog contains three sections: **Picture**, **Events Summary Profile** and **Trend Viewer**.

2. Click the **Include Events Summary Viewer** box to enable the fields in this section.

3. Click the **Profile** box and select an Events Summary Profile file from the list of available Profiles.

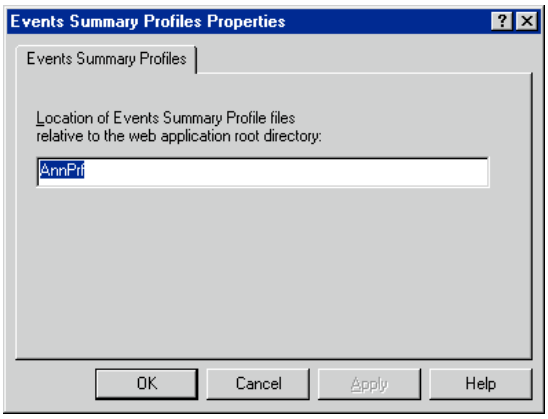
4. (Optional). You can change the default width and height of the viewer in the **Width** and **Height** fields. It is recommended to generate the page first and view it in your browser, before changing the default options.
5. Click **Generate**. The *New File* dialog is displayed.
6. Navigate to the AnnPrf folder, enter a name for the HTML page and click **Open**. The page is generated. It is saved in the List of HTML files in the Application Studio.
7. Click on the page in the List of HTML files to display it in your browser.

Changing the Default Location of Events Summary Profile Files

The *Events Summary Profiles Properties* dialog enables you to determine the location of the Events Summary Profile files folder, relative to the web application root directory. This folder (AnnPrf) is located by default in the Docs directory of the application.

➤ **To change the default location:**

1. In the All Containers section, right-click **Events Summary Profiles** and select **Properties** from the popup menu. The *Events Summary Profiles Properties* dialog is displayed:



   The default folder name **AnnPrf** is displayed.

2. Enter a folder name and click **Apply**. If the folder does not exist, a message is displayed asking if you want Wizcon to create it.

3. Click **OK** to save your changes and to close the dialog.

You can also determine the location of the Events Summary Profile folder by right-clicking **Web Application** in the All Containers section, selecting **Properties** from the popup menu and selecting the **Events Summary Profiles** tab from the displayed dialog.

Chapter 11
Creating Images and Picture Viewers

About this chapter:

This chapter describes how to work with Wizcon Images. It also describes how to create a Picture Viewer so that the Image can be viewed in a browser, as follows:

Overview, on the following page, describes an overview of Wizcon Images and a description of the Picture Viewer.

The Image Window, page 11-3, describes how to open an Image window, its toolbar and toolboxes, modes.

Layers, page 11-9, describes how to work with layers in Images.

Viewing, page 11-17, describes viewing Images in their windows, scrolling and panning and zooming.

Creating Picture Viewers, page 11-25, describes how to create a Picture Viewer by generating an HTML page from an Image.

Image Technical Specifications, page 11-28, provides technical specifications of Images.

Image Properties, page 11-30, describes how to enhance the Image and update its properties.

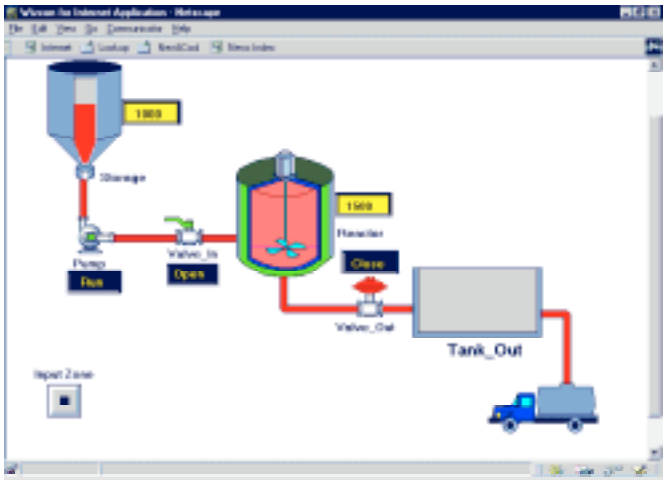
Overview

Wizcon Images are dynamic graphic representations of industrial processes. Each tag in an industrial process can be represented by an Image object, and each object can represent specific process values, thereby displaying a dynamic picture of the process.

This chapter provides basic information about Images and how they are created. It also describes Image navigation activities (how Images are viewed and manipulated).

Picture Viewers

A completed Image is converted into an HTML page, and then published so that an operator can interact with the process through a browser. An example of a Picture Viewer is shown below:



Refer to the Getting Started Guide for a full description on interacting with a Picture Viewer.

Images are created, edited and viewed in windows that can be moved, sized and closed. The Image window can be operated using standard window techniques, according to the windows specific configuration defined during application setup.

➤ **To open an Image window:**

Click the **New Image** icon in the toolbar.

or,

In the All Containers section of the Wizcon Application Studio, right-click **Images** and select **New Image** from the pop-up menu. A full Image window appears as follows:

In addition to the standard fields, the Image window contains the following elements:

Title Bar	Displays the title of the Image.
Image Region	The work area in which you draw the Image.
Scroll Bars	The bottom and right edge sliders used for scrolling horizontally and vertically. The slider position and size relative to the scroll bar, represents the position and size of the window relative to the workspace.
Status Bar	Specifies information of x y coordinates, scale and layers.
Zoom Bar	The left edge slider used for zooming. Moving up, zooms out (see a more detailed view); moving down, zooms in.
Action Buttons	Buttons located above and below the Zoom Bar, used for viewing operations. These operations include automatic positioning of the Image (a), window selection (w), and Image redraw (r).
Toolbar	Contains buttons to activate the most common functions, as described on page 11-5.

Note that none of these elements appear in the **Monitor** mode, which is described on page 11-7.

The Image menu bar contains the following main menus:

Select	To do
File	Image window file operations.
Edit	Image editing operations.
View	Access Image toolbars.
Layers	Layer operations.

Select	To do
Clusters	Object library operations.
Options	Various options for different Image window operations
Modes	Set the operating mode of the window.
Help	Access the online help.

In addition to the Image window, a Tools window is invoked in **Edit** mode. This window contains drawing tools.

Several Image windows can appear on the screen simultaneously. This enables the operator to view and edit separate parts of the same Image, or different Images, on the same screen. Current coordinates of an active Image window are displayed in the title bar of the Image window.

The Image Toolbar and Toolboxes

The toolbar contains tools that you can activate to perform Image graphic and layout design operations. Images can be designed, modified, and monitored by selecting the appropriate tools in this window.

The toolbar is displayed when an existing Image or a new Image window is opened.

The function of each tool is described in *Chapter 12, Image Editor*.

When an editing operation is selected, the icon associated with that operation will be attached to the cursor.

In addition, when the cursor is moved to a tool area, a brief description of that tool will appear in the title bar of the window.

Toolbox Activation

Menu ⇨ Modes ⇨ Edit

Toolboxes are invoked by activating the Image **Edit** mode.

➤ **To display the toolboxes:**

Select **Edit** from the *Modes* menu in the Image window.

You can also show or hide the different toolboxes and menus by selecting the *View* menu and clicking on the appropriate toolbox.

Toolboxes are described in more detail in *Chapter 12, Image Editor*.

Window Modes

The Image window operates in the following modes:

- **Monitor**: for viewing and monitoring the Image. This means that the Image is not in **Edit** mode, as described on the following page.
- **Navigate**: for moving through an Image work space without editing the Image, as described on the following page.
- **Edit**: for designing and editing an Image, as described on page 11-8.

In addition, the **Trigger On** mode can be activated with any of the modes mentioned above to enable the use of Trigger objects.

The default operational mode is the **Monitor** mode.

Note: Since modes are activated and changed through the Modes menu in the Image window, the operator must have the proper authorization to use that menu.

Each of the Image modes is described in the following sections.

Monitor Mode

In this mode (the default), the window consists only of a frame and an Image. No other element (such as scroll and zoom bars, action buttons, menus, and so on.) is present.

In this mode, the displayed Image can only be viewed (not navigated or edited). However, tag input can be performed if the operator is authorized to do so and the **Trigger On** mode has been activated.

Navigate Mode

Menu ⇨ Modes ⇨Navigate

In this mode, the Navigation functions of the window are present. These functions include scroll and zoom bars, action buttons and Image coordinates.

The Navigate mode is used to move through an Image without editing it.

This mode is entered by selecting **Navigate** from the *Modes* menu. A check beside the item indicates that it is active. Selecting the item again causes the system to revert to the **Monitor** mode.

In this mode, the displayed Image can only be viewed (not navigated or edited), though tag input can be performed if the operator is authorized to do so and the **Trigger On** mode has been activated.

Edit Mode

Menu ⇨ Modes ⇨ Edit

In this mode, all the Image window functions are present, including the Tools window, which contains the drawing and editing tools used to create and modify Images.

In the **Edit** mode, an Image can be designed, edited and navigated.

➤ **To activate the Edit mode:**

Select **Edit** from the *Modes* menu. A check beside the item indicates that it is active. Selecting the item again causes the system to revert to the **Monitor** mode.

The Tools window initially appears outside the Image window, but can be moved to any new location, as explained below. In this mode, the displayed Image can only be viewed (not navigated or edited), though tag input can be performed if the operator is authorized to do so and the **Trigger On** mode has been activated.

Trigger On Mode

Menu ⇨ Modes⇨Trigger On

When the **Trigger on** mode is selected, objects defined as Trigger objects can be used for tag input.

When this mode is not selected, no object, even one defined as a Trigger object, can be used for tag input. When this mode is active, you can move from one trigger object to another by pressing the <Tab> key. To move in the reverse order, press the <Shift> and <Tab> keys together.

Note: You move from one object to another according to the order in which the objects were designed. To change the order, use the Z order tool, which is described in The Tool Window section.

Layers

Image objects are drawn in layers. Each Image can consist of several layers or of only one, the Base layer. Layers can be added, changed and deleted.

In an Image, each individual layer constitutes one part of the overall Image. A complete Image consists of all the layers that belong to that Image.

Each layer is assigned a zoom range. Once created, layers can be viewed in one of two scaling modes: **Elaborating Zoom On** or **Elaborating Zoom Off**.

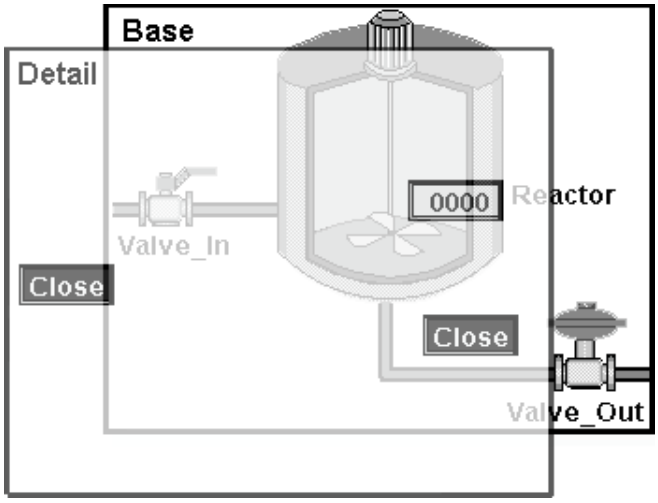
When the **Elaborate On** mode is selected, each layer will be viewed according to the scale range specified in the Layer Definition operation described on page 11-10. When the mode is deselected, layers will always appear (even if scaling ranges were not specified for them).

In addition, each individual Image layer can be assigned its own authorization level, to enable only specific operators to view the layer. Each layer can be made visible or hidden, using the visibility mode toggle explained later in this chapter.

Layer Example

The following is an illustration of an Image divided into two layers, for which the zoom feature can be implemented.

The first layer is an overview of the entire plant structure. The second layer includes the detailed view of one part of the plant.



Layer Definition

Menu ⇨ Layers / Definition

Note: It is recommended to refer to Step 5 of the Getting Started Guide to see how to define layers in more detail.

You can define a new layer or modify an existing one.

➤ **To define/modify a layer:**

Select **Definition** from the *Layers* menu. The *Layer Definition* dialog is displayed:

The following options are available:

Name	Specifies the name of the layer to be defined or revised (up to 15 characters).
From Scale	Specifies the zoom range lower limit at which the layer will be visible in the **Elaborating Zoom** mode (from 1 to 2048).
To Scale	Specifies the zoom range upper limit at which the layer will be visible in the **Elaborating Zoom** mode (from 1 to 2048).
Group	Specifies the layer authorization assignment.
List	Specifies the list of existing layers and their respective zoom ranges.

- To add newly-defined layer names and attributes to an Image:

  Activate the **Add** button.

- To save the changes made to an existing layer:

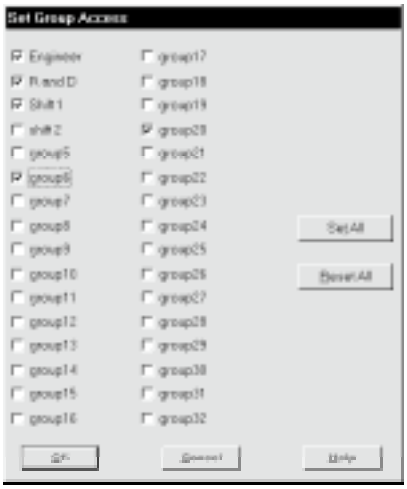
  Activate the **Change** button.

- To delete a layer:

  Select the layer and activate the **Delete** button. Deleting a layer will cause all the objects in that layer to be deleted. In addition, note that the **active layer** cannot be deleted. To do so, you must first change the active layer. Then delete the first layer when it is not active.

- To assign groups to a layer:

  Activate the **Group** button. The *Set Group Access* dialog appears:



Each group checked will be assigned to the layer for viewing. Only authorized operators, assigned to a group that corresponds to any of the layer groups, can access the layer for viewing and editing.

Note: This option is supported for Windows only.

Active Layer

Operations toolbox ⇨

Image Menu ⇨ Layers ⇨ Active Layer

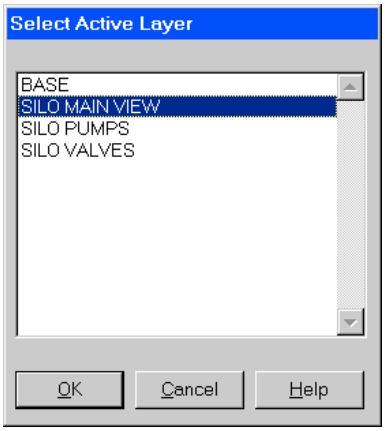
Image objects are drawn in layers. Objects are always drawn in the current active layer. To draw objects in other layers (not active), you must first make the layer active.

➤ **To make a layer active for drawing and editing:**

Select **Active Layer** from the *Layers* menu.

or,

Activate the **Active layer** tool from the **Operations** toolbox. The *Select Active Layer* dialog is displayed:



Any layer selected from the list will become the active layer. The name of the active layer will then appear in the window title.

Note: Layers can be modified only in the Edit mode, as described in more detail in Chapter 12, Image Editor.

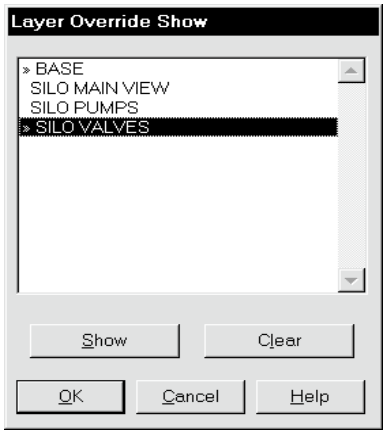
Forced Layer Display

Menu ⇨ Layers ⇨ Override Show

You can override the current visibility mode and make a layer visible.

➤ **To make a layer visible:**

Select **Override Show** from the *Layers* menu. The *Layer Override Show* dialog is displayed:



The following options are available:

Show Specifies that the selected layer will always be visible.

Clear Specifies that all layers revert to default visibility.

A layer set to be visible (**Show**) is marked with a special arrowhead character.

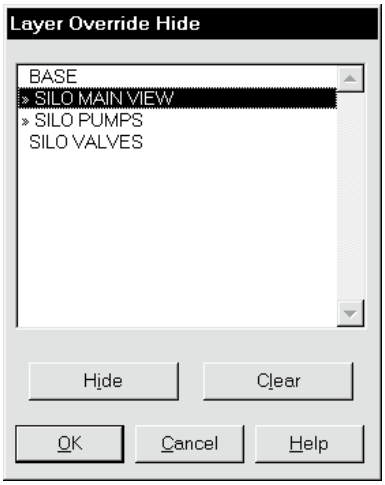
Forced Layer Hide

Menu ⇨ Layers ⇨ Override Hide

You can override the current visibility mode and hide a layer.

➤ **To hide a layer:**

Select **Override Hide** from the *Layers* menu. The *Layer Override Hide* dialog is displayed:



The following options are available:

Hide Specifies that the selected layer will always be hidden.

Clear Specifies that all layers revert to default visibility.

Any layer set to be hidden (**Hide**) is marked with a special arrowhead character.

Note: If both the Hide and Show attributes are assigned to a layer, that layer will be hidden.

Elaborate On Mode

Menu ⇨ Layers ⇨ Elaborate On

Layers can be viewed in one of two scaling modes**: Elaborating Zoom On** or **Elaborating Zoom Off**.

When the **Elaborating Zoom** mode is On, each layer will be viewed according to the scale range specified in the Layer Definition operation described earlier in this chapter. When the mode is Off, layers will always appear (even if the current scale does not fall within the layer's scale range).

To toggle the **Elaborating Zoom** mode on and off, select the **Elaborate On** item from the *Layers* menu. A checkmark (✓) beside the item indicates that the mode is active.

Note: Even if the Force Override Show or Elaborate Off option is used for a layer, unauthorized operators will still not be able to view that layer.

Moving Objects to Active Layer

Menu ⇨ Layers ⇨ Move Objects to Active Layer

To move selected objects to the active layer, first select the objects that you want to move, and then select **Move Objects to Active Layer** from the *Layers* menu.

Note that the **Move Objects to Active Layer** option is not enabled unless you selected one or more objects.

Viewing

Part of an Image is always visible in the Image window. Several Viewing operations can be used to move through an Image and zoom in or out.

Each of the Viewing operations is described in the following sections.

Scrolling and Panning

An Image can be scrolled (vertically) or panned (horizontally) using the Scroll Bars at the bottom and right edges of the window.

The size of the sliders varies according to the size of the window. When the window is enlarged, the slider size and position will reflect the new window size and position. When the window is reduced, the slider will reflect the new reduced size and position accordingly.

Zooming

The Zoom level determines how close the Image will be viewed. The smaller the zoom level, the closer the Image will be (objects will be larger), and less of the total Image will be visible. Note that though objects may seem larger, their size in terms of Drawing Units does not change.

Any Zoom level can be assigned from 1 to 2048. At a zoom level of 64, each Drawing Unit is 0.01 mm on a standard monitor.

The Zoom level of an Image is indicated by the **Scale** parameter in the title bar of the window.

Note: It is not recommended to work in an extremely low or high scale, since text and other objects may not appear correctly when redrawn.

The following Zoom operations can be performed:

Factor Zoom	Performed using the Zoom Scroll Bar at the left edge of the window.
Window Zoom	Performed to mark a window to be used later as a window.
Auto Zoom	Automatic matching of an Image region that contains objects.

In addition to these Zoom operation methods, zooming can be performed by selecting **GotoZone** from the *Options* menu, as explained below.

The selected zoom method is displayed in the window title together with the Image and active layer names.

Each of the Zoom operations is described in the following paragraphs.

Factor Zoom

Zooming by factor is performed by moving the slider of the Zoom Bar. Move the slider up to Zoom out and down to Zoom in.

Window Zoom

Button ⇨ W

Menu ⇨ Options / Window

A window zoom is performed by marking a window in the Image to be used later as the window. This zoom enables the operator to define what is to be included in the window.

➤ **To draw a window:**

1. Click the **W** button in the top left corner of the window, or select **Window** from the *Options* menu. The cursor shape changes to .
2. Click the left button on a corner of the window to be zoomed.
3. Move the cursor until the desired window is traced, and click the left button again.
4. The window is now marked. Note that the window size and shape is in proportion to the window.
5. Click the left button inside the marked window. The Image is zoomed in to match the marked window.

The marked window can be moved by clicking the left button on its edges. When the cursor takes the shape of crossed arrows, click the left button on the new location.

Note: After a window is marked, it can be unmarked by clicking the right button. An additional click with the right button will cancel the operation and the cursor will revert to its regular arrow shape.

Auto Zoom

Button ⇨ A

Menu ⇨ Options / AutoWindow

When the Auto Zoom operation is activated, only the filled part of an Image (not empty space) will appear in the window. This operation automatically positions the window and adjusts the Zoom Factor so that all the Image objects can be viewed.

➤ **To position the window:**

Click the **A** button in the top left corner of the window, or select **AutoWindow** from the *Options* menu. The window is automatically adjusted.

After this operation is performed, a window in the window will be marked to represent the previous position of the window. If the previous window is larger than the current window, the current window will be marked on the window border.

When the left button is clicked outside the marked window, the current window will be active. Clicking inside the window causes the previous window to return. This is useful to toggle between a detailed drawing and a drawing overview.

After the Auto Zoom is invoked and a window is marked, all the operations valid for a Window Zoom, such as re-shaping and moving the marked window, are valid for this operation as well.

Navigating

To move the cursor in Wizcon Images, you can use the keys and key combinations listed below.

Note that by default, one unit of movement along the X or Y axis equals four pixels.

Arrow Keys	Move the cursor in the respective direction, one unit at a time.
CTRL + Arrow	Moves the cursor in the respective direction, five units at a time.
x (for X axis)	Deletes one pixel from the movement unit.
y (for Y axis)	Deletes one pixel from the movement unit.
Shift + x (X axis)	Adds one pixel to the movement unit.

Shift + **y** (Y axis)	Adds one pixel to the movement unit.
Home	Resets the movement unit back to the default (four pixels).
Spacebar	Simulates the left mouse button.
Shift + Spacebar	Simulates the right mouse button.
Tab	Moves from one Trigger object to the next (only if the **Trigger On** mode is active). To move to the previous Trigger object, use the <Shift> and <Tab> keys.
Shift + Tab	Moves from one Trigger object to the previous Trigger object (only if the **Trigger On** mode is active).

In addition to using special cursor movement keys, you can use Zones or Positions to navigate through Images. Zones can be defined in order to mark specific areas in an Image for navigational purposes. Positions can be specified in order to jump to different locations in an Image.

The following paragraphs explain these operations.

Defining Zones

Menu ⇨ Options / Zones Definition

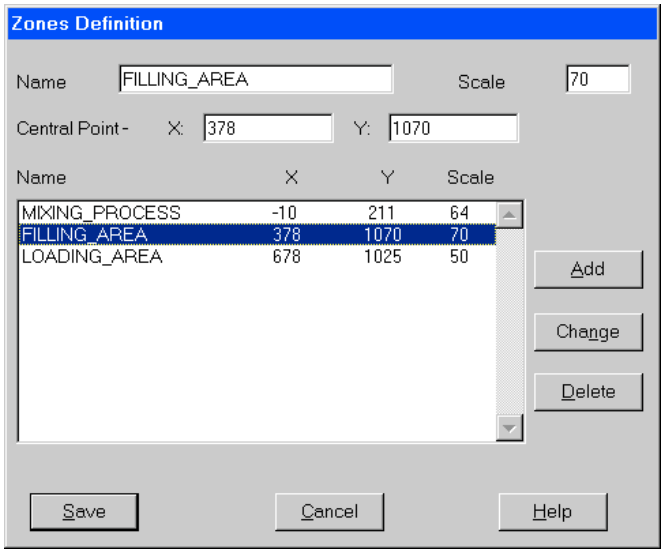
A Zone is a specific area in a Wizcon Image marked for navigational purposes. Once defined, zones can be used in go-to and macro operations, to cause specific Image sections to fill the Image area of the window immediately.

In Wizcon for Internet, each time a zone is defined, the zone area is saved in a single picture file. When generating HTML pages, these pictures are used to determine the opening view of the Image in the page, as described on page 11-26.

To see how to define a zone in more detail, it is recommended to refer to Step 6 in the Getting Started Guide.

➤ **To define a zone:**

Select **Zones Definition** from the *Options* menu. The *Zones Definition* dialog is displayed:



Enter a new zone name, the scaling units, and the central point coordinates.

The **Add** button is used to add the new zone to the list of existing zones, and the **Change** button is used to change the specifications of a selected zone.

Note: You can define up to 500 zones per Image.

Jumping to Zones

Menu ⇨ Options / Goto Zone

➤ **To jump to a specified zone in an Image:**

Select **Goto Zone** from the *Options* menu. The *Goto Zone* dialog is displayed:

Select the zone that you want to jump to.

A predefined zone called **previous zone** is included in the zone list. This zone appears as the characters <<<. You can go to this zone the same way as to any other zone. However, if there is no zone to return to, the previous zone item will be disabled.

The previous zone item operates as follows: For example, from a zone called MAIN you go to a zone called ENGINE1, and from there you go to a zone called MOTOR3. If you select the previous zone item, you will return to ENGINE1. If you select the previous zone item again, you will return to the zone called MAIN.

The previous zone item will appear in all the Zone fields of relevant dialogs (triggers, macros, etc.).

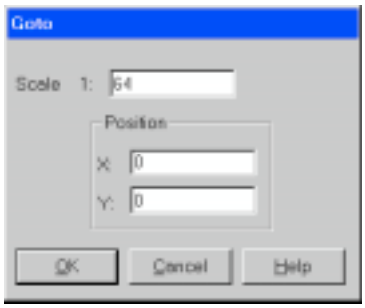
Jumping to Positions

Menu ⇨ Options / Goto

You can jump to a specific position in an Image (whether or not that position is defined as a zone).

➤ **To jump to a specific position in an Image:**

Select **Goto** from the *Options* menu. The *Goto* dialog appears:



Define the value of one scale unit, or use the default that appears in the **Scale 1**: field. Then enter the **X** and **Y** coordinates of the position.

When all the information has been entered and confirmed, the window will jump to the specified Image position.

Creating Picture Viewers

A Picture Viewer displays a graphical representation of a process in a browser.

The Wizcon for Internet HTML assistant enables you to choose what graphical representation is displayed by the Picture Viewer when the HTML page is first opened, by selecting one of the project *Picture* files.

Picture files are automatically generated and saved with a .wnp extension when zones are created in an Image. A single Picture file is created for every zone defined in an Image. Zones and Picture files are described in more detail on page 11-21.

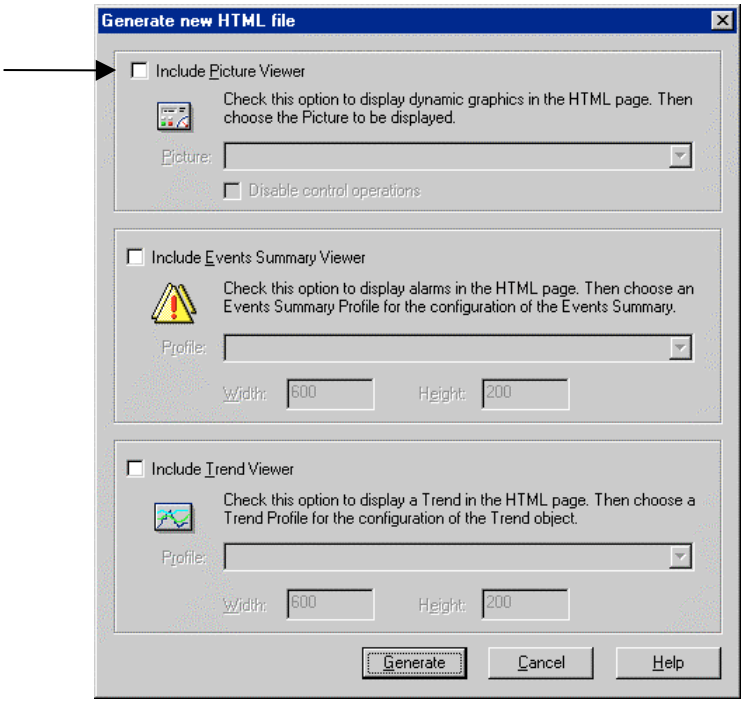
This section describes how to generate a single HTML page that contains the Picture Viewer. For details on generating a single HTML page that contains two or more objects, refer to *Chapter 15, Generating HTML Pages*.

➤ **To create a Picture Viewer:**

1. Click the **New HTML File** icon in the toolbar.

   or,

   From the All Containers section of the Wizcon Application Studio, right-click **HTML** and select **New HTML File** from the pop-up menu. The *Generate new HTML file* dialog is displayed:


Generate new HTML file
Include Picture Viewer
Check this option to display dynamic graphics in the HTML page. Then choose the Picture to be displayed.
Picture:
Disable control operations
Include Events Summary Viewer
Check this option to display alarms in the HTML page. Then choose an Events Summary Profile for the configuration of the Events Summary.
Profile:
Width: 600
Height: 200
Include Trend Viewer
Check this option to display a Trend in the HTML page. Then choose a Trend Profile for the configuration of the Trend object.
Profile:
Width: 600
Height: 200
Generate
Cancel
Help

   The dialog contains three sections: **Picture**, **Events Summary Profile** and **Trend Viewer**.

2. Click the **Include Picture Viewer** box to enable the fields in this section.

3. Click the **Picture** box and select a Picture file from the list of available files.

4. (Optional). Select the **Disable control operations** check box if you want to disable control operation for the user.
5. Click **Generate**. The *New File* dialog is displayed.
6. Enter a name for the HTML page and click **Save**. The page is generated. It is saved in the List of HTML files in the Application Studio. You can click on the page in the List of HTML files to display it in your browser.

Image Technical Specifications

The following table lists the technical specifications of the Wizcon Image:

Image Specifications	
Coordinate space	2,000,000 x 2,000,000 pixels
Number of static elements	100,000
Number of dynamic elements	10,000
Number of zoom scales	2,048
Number of zones	500
Number of layers	64

Standard Graphics Files (JPG and BMP) Support

JPG files and BMP files can be inserted into an Image and also displayed by the Picture Viewer on the browser. JPG and BMP files can be used as a background for other dynamic objects and can also be animated using the dynamic definition. For more details about dynamic objects and animating, refer to *Chapter 13, Image Animation*.

It is recommended that JPG and BMP files are located in the same directory as the Image file so that when the application is copied to other computers those files will be transferred also. You will be prompted to copy the file to the Image directory if you insert a graphic file in a directory which is not under the application directory.

In Wizcon for Internet, when a BMP file is inserted into an Image, it is converted to a JPG file when the Image is saved.

BMP pictures inserted into an Image through the clipboard are not supported by the Picture Viewer in the web browser.

Image Properties

Wizcon parameters can be fine-tuned to enhance the Image and update performance. These environmental properties control Image size, resolution, minimum and maximum amount of time Wizcon will wait before updating Image objects when their values change, and more.

Image Properties are used to define the properties of the Image and update performance.

➤ **To access the Property dialog box:**

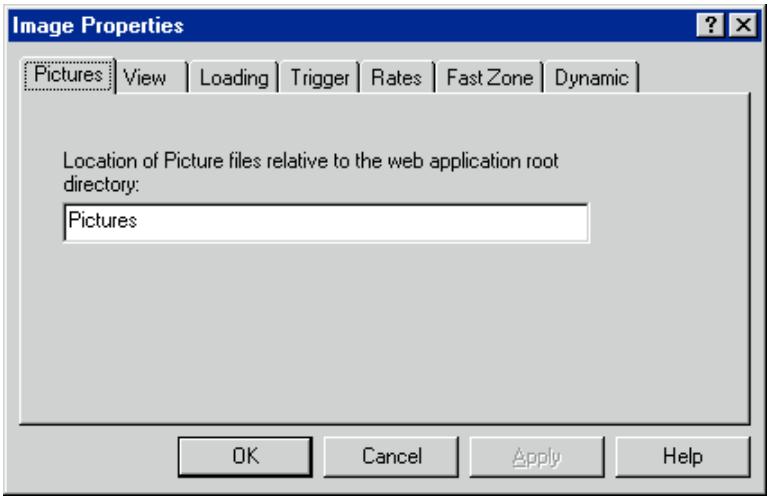
From the All Containers section of the Wizcon Application, right-click **Images** and select **Properties** from the popup menu. The *Image Properties* dialog is displayed in which you can:

- Determine the location of the pictures files folder in the **Pictures** tab, as described on the following page.
- Repaint the Image after editing operations in the **View** tab, as described on page 11-32.
- Set the amount of memory available for Image objects in the **Loading** tab, as described on page 11-36.
- Determine parameters for trigger objects in the **Trigger** tab, as described on page 11-38.
- Determine the Image update performance in milliseconds as well as determine the size of the internal message buffer that Images use to collapse the tag/alarm notification message received by WizPro, in the **Rates** tab, as described on page 11-40.
- Determine the period of time (in ms) for "slow" zones in the **FastZone** tab, as described on page 11-41.
- Determine the blinking rate values for dynamic objects in the **Dynamic** tab, as described on page 11-43.

Determining the Location of the Picture Files Folder

The location of the Picture files folder is determined in the **Pictures** tab. The Pictures folder is located by default in the Docs directory, which is the default web root directory.

Its location is relative to the web application root directory.

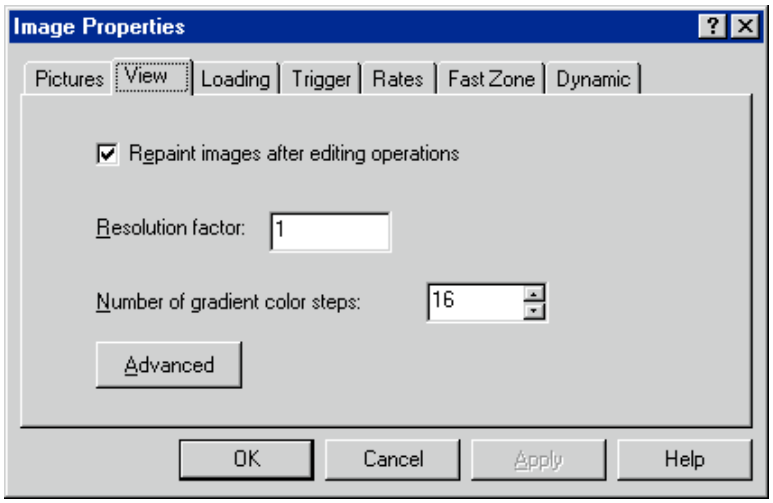


Enter the required location and press the **Apply** button.

You can also determine the location of the Picture files folder by right-clicking **Web Application** in the All Containers section, selecting **Properties** from the popup menu and selecting the **Pictures** tab from the displayed dialog.

Repainting the Image

You can specify that an Image is automatically repainted after such actions as moving and copying, and overcome any display differences, in the **View** tab of the *Image Properties* dialog.



The following options are available:

Repaint Images after editing operations — Enables an Image to be repainted automatically after actions such as, moving, copying and so on, that may leave the Image, drawn incorrectly. It is useful for small and medium sized zones (an Image not having too many objects). This change can be implemented online.

Resolution Factor — Sets a global stretching or shrinking factor that applies to all Images. This overcomes display differences caused by replacing an operating system, a monitor or other hardware devices. The display of Images is resolution-dependent. Refer to the next page to see how to obtain the correct value for your application. This

	parameter is also used for moving between resolution. It is not recommended to develop an application using a factor other than 1. While the window itself, in pixels remains the same size, one centimeter in one Image will not be one centimeter in the other. A value of 1 leave the Image as is. Values greater than 1 expand the Image. Obtaining values for your application is described in more detail below.
Number of Gradient Gradient Color Steps	This parameter determines the number of steps used in drawing objects with a gradient fill. Default is 16. Note that performance may suffer when drawing large gradient surfaces with many steps. Develop using low number of steps and then increase for run-time.
Advanced	Displays the *Set Image Window Attributes* dialog in which you can set window attributes, as described on page 11-34.

Obtaining Values for Your Application

When changing the Resolution Factor, as described on the previous page, the window itself, in pixels remains the same size, but one centimeter in one Image will not be one centimeter in the other. A value of 1 leaves the Image as is. Values greater than 1 expand the Image.

➤ **To obtain the correct value for your application:**

1. Load the Image in one PC and measure an object's length in the Image (a line will do).
2. Load the same Image in another PC and measure the same object's length.
3. Divide the first length by the second length and the result is the *xx.xx* value.
4. Enter the IMG_RESFACTOR with the value you found and reload Wizcon.

   The range is 0.1<=IMG_RESFACTOR<=10.

   The default value: 1

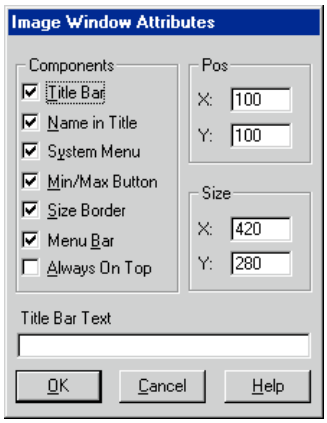
Restart Wizcon for changes to take effect.

The range of the factor is 0.1<+IMG_RESOLUTION _FACTOR<=10

Setting Image Window Attributes

Note: Setting Image Windows Attributes is not applicable on the Web.

You can set Image window attributes by activating the **Advanced** button in the *Image Properties* dialog. The *Set Image Window Attributes* dialog is displayed:



Each listed attribute can be set on or off. When confirmed, the selected attributes will apply to all future windows of the type specified.

The following options are available:

Title Bar Specifies the line in the window that contains the title. The window can be moved to a new location on the screen by clicking the mouse on the title bar and dragging the window to the new location.

Name in Title Specifies the window name that appears in the title. This component is relevant only if the Title Bar appears.

System Menu Specifies the menu that appears when you click on the small box in the upper left corner of a window. This menu contains items that can be used to manipulate windows (move, size, close, etc.).

Note: The System menu is Title bar dependent. Its corresponding check box is unchecked and disabled.

Min/Max/Close Specifies the buttons that appear in the upper right corner of a window. These buttons can be activated to reduce the window to an icon or enlarge the window to predetermined sizes, or close the window.

Note: The Min/Max button is System menu dependent. Its corresponding check box is unchecked and disabled upon unchecking the System menu.

Size Border Specifies window borders that when clicked on, can be dragged to change the window size.

Menu Bar Specifies the line in which the window menus appear.

	Note If the Menu bar is not selected but the System menu is, the menus and items included in the Menu bar will appear in the System menu.
Always on Top	Select to display the Image on top of other open applications.
Pos	Specifies the window X and Y position coordinates in pixels.
Size	Specifies the window size in pixels.
Title Bar Text	Specifies the text to appear in the title bar if the title bar option was selected.

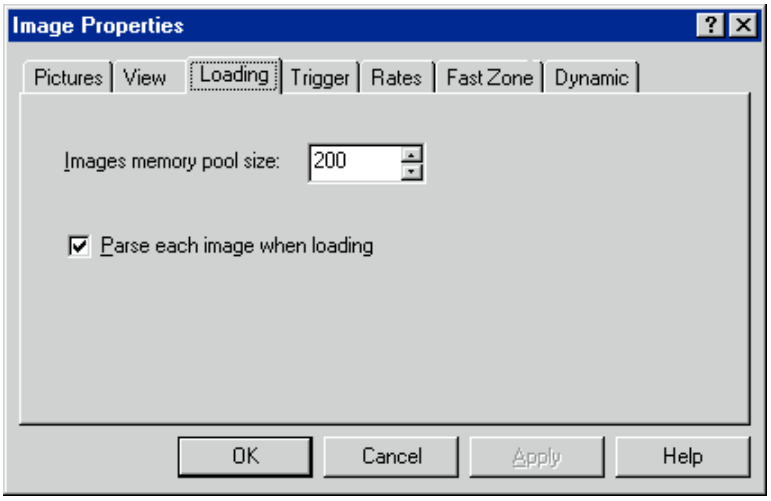
Window attributes allow you to limit access to the operating system and other applications by creating fixed size windows located in fixed positions that can not be moved.

Setting the Amount of Memory Available for Image Objects

Note: Setting the amount of memory available for Image objects is not applicable on the Web.

You can set the amount of memory available for Image objects, in the **Loading** tab of the *Image Properties* dialog, as shown on the following page. The value for the parameter can be set from 60 to 200.

You can also determine the amount of memory available for Image objects, as well as enable or disable tag name parsing upon loading in Images.



The following options are available:

Images memory pool size Enables large Images with many objects to be created, but allows only about 10 Image windows to be open at one time. The lower the value, the more Image windows that can be open simultaneously, but they must be smaller in size.

The value for the parameter can be set from 60 to 200.

After determining the Pool size restart Wizcon for changes to take effect.

Parse each Image when loading

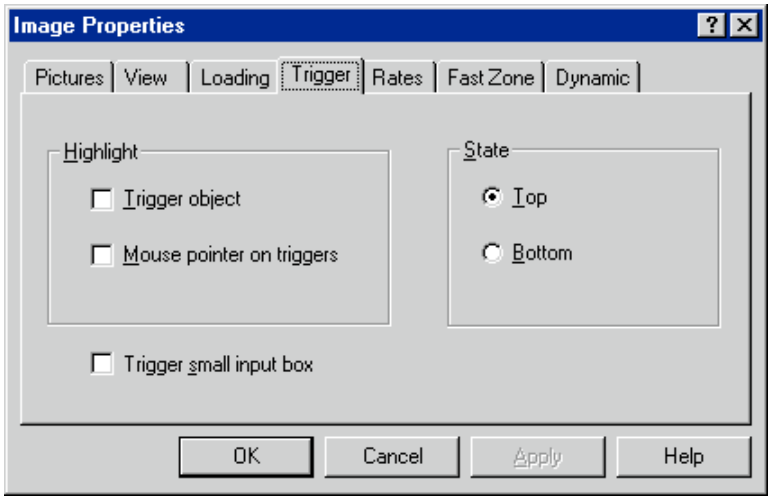
Enables or disables tag name parsing upon loading in Images. Disable this option to shorten Image load time for Images that contain network tags.

Caution: When this option is disabled, the validity of network tags is not checked. It is suggested to use this option after all tag definitions on network station is completed.

After checking this option, make sure to restart Wizcon for changes to take effect.

Defining Parameters for Trigger Objects

You can define parameters for trigger objects in the **Trigger** tab of the *Image Properties* dialog, as shown below:



The following options are available:

State

State parameter is not applicable on the Web. Determines which trigger object is activated when you click on overlapping trigger objects: The top or the bottom one. You can specify:

Top: for top (default)

Bottom: for bottom.

Highlight

The following options are available:

Trigger object: Determines whether or not trigger objects are highlighted when you hold the mouse button down on the object. If this option is checked, trigger objects will be outlined (with dashed lines) when they are selected. The default option is not selected.

Mouse Pointer on triggers: Determines whether or not the mouse pointer will be highlighted when it is moved on top of a trigger object in an Image. The default option is not selected.

Trigger small input box

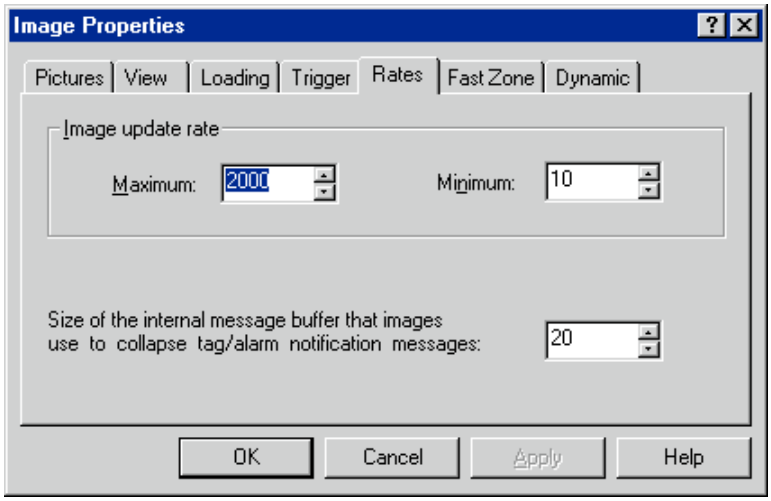
When checking this parameter, the dialog appearing when defining Data Entry for triggers, will be small with just a field for entering the value.

Restart Wizcon for changes to take effect.

Determining the Image Update Performance and the Size of the Internal Message Buffer

Note: The Image Rates Properties is not applicable on the Web.

You can determine the Image update performance in milliseconds, in the **Rates** tab of the *Image Properties* dialog, as shown below. You can also determine the size of the internal message buffer that Images use to collapse tag/alarm notification message received by WizPro.



The following options are available:

Image update rate Specifies the Image update performance in milliseconds. Specify **Maximum** and **Minimum Rates**. The default values are: **Maximum** = 2000 and **Minimum** = 10.

Message Buffer size Determines the size of the internal message buffer that Images use to collapse tag/alarm notification message received by WizPro. When tag values change, an Image receives messages in a buffer from WizPro and updates graphical objects accordingly. The range is 5 to 500 messages.

A *high* value for this parameter improves the performance of Images with rapidly changing dynamic objects, so that Images will not have to make graphical updates for each value message. The default is 20 messages

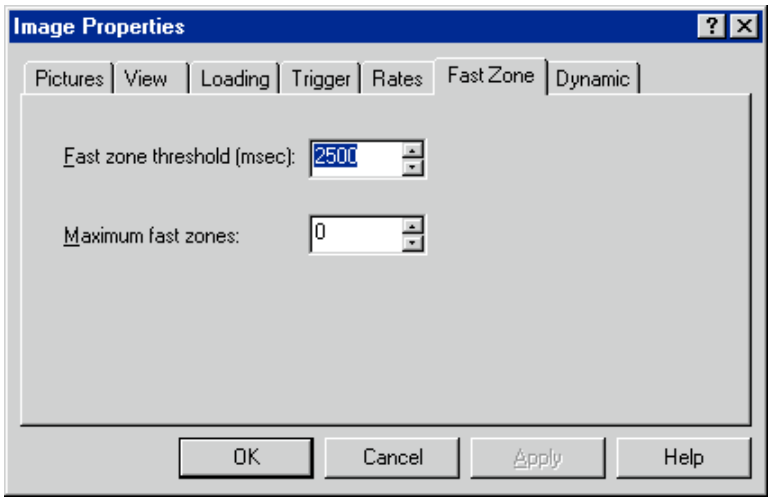
Restart Wizcon for changes to take effect.

Determining the Period of Time for Slow Zones

Note: The Image FastZone Properties is not applicable on the Web.

You can determine the period of time (in ms) for *slow* zones, in the **FastZone** tab of the *Image Properties* dialog, as shown below.

A zone is slow if it has a background that takes more than a given period of time to draw. You can improve the drawing time for Goto Zone operations, by using a cache of memory bitmaps for drawing the background of slow zones.



Notes: This only affects the background of the Image. Dynamic elements are drawn as before. Operate only when NOT is Edit mode.

The following options are available:

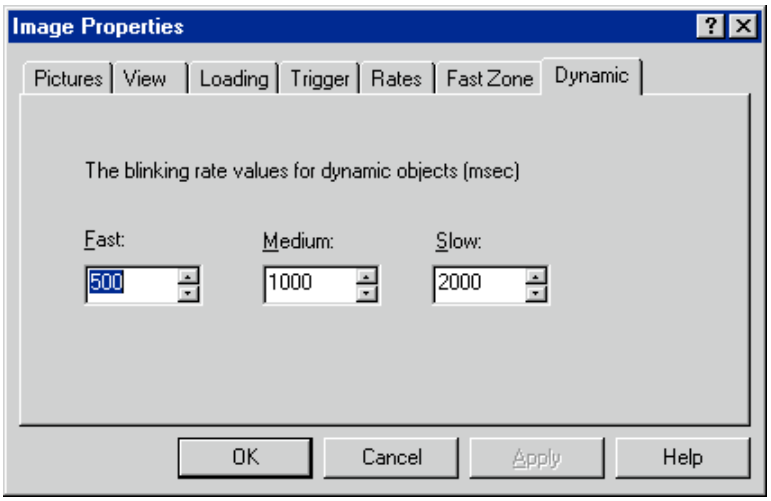
Fast zone threshold (msec)	Specifies the fast zone threshold. If this parameter is set to be 2500 and the background takes 2500ms or more to draw, the zone is considered to be slow. The range is 0 to 1 hour (in ms). The default is 2500ms.
Maximum fast zones	Determines the limit of the number of fast zones bitmaps that can be kept in a single window's memory cache. When a window reaches this limit, the least recently used fast zone bitmap is removed from the cache in order to make room for the new bitmap. The available range is 0-50.The default is 0 (FastZone disabled).

Restart Wizcon for changes to take effect.

Determining the Blinking Rate Values for Dynamic Objects

Note: The Image Dynamic Properties is not applicable on the Web.

You can determine the blinking rate values for dynamic objects in the **Dynamic** tab of the *Image Properties* dialog, as shown below.



The format of this parameter is from left to right.

It is recommended to increase the values for this option if it is anticipated that a large number of dynamic objects on the screen will be updated at once.

The blink rate is the amount of time the object will appear on the screen, then disappear, then reappear, and so on.

The values you specify for *fast*, *medium* and *slow* are in milliseconds and can be from 50 (1/20 second) to 30,000 (30 seconds). If you specify a value that exceeds these limits, Wizcon will automatically apply the

maximum and minimum values instead. The default values are 200, 500 and 1000 ms.

Note that:

- High blink rates decrease the system's performance.
- When using the Wiztune.dat file to enter the values, use commas (,) to separate the values.

Restart Wizcon for changes to take effect.

Chapter 12
Image Editor

About this chapter:

This chapter describes the Wizcon for Windows and Internet Image Editor, as follows:

Overview, page 12-3, provides an overview of the Image Editor.

Basic Principles, page 12-4, describes some of the basic concepts used for Image design.

Image Toolbar and Toolboxes, page 12-7, describes the Image toolbar and toolboxes.

Wizcon Color Features, page 12-12, describes some of the Wizcon color features.

Image Design, page 12-15, describes some basic concepts frequently used when designing Images.

Drawing in the Image, page 12-18, describes how to design, draw and modify an application using the appropriate tool.

Image Edit Menu, page 12-21, describes the Edit menu items.

Drawing Shapes, page 12-22, describes how to draw with the tools in the Drawing toolbox.

Font Style Selection, page 12-29, describes how to define font styles and modify text.

Image Editing, page 12-32, describes the Image editing operations performed to alter the current state of an object or groups of objects in an Image.

Clipboard Operations, page 12-49, describes the clipboard operation which is used to transfer data between applications.

Cluster Library, page 12-53, describes the Cluster Library provided by Wizcon to simplify and speed up application design and maintenance.

Grids, page 12-72, describes what Grids are and how they are used.

Image File Menu, page 12-76, describes how the Image File Menu provides the user with the basic operations of the Image.

Image File Management, page 12-77, describes the file management of Images and Image Windows.

Image Files, page 12-78, describes the filing operations for Image files.

Overview

The Image Editor is the graphic tool of the Wizcon system. It is used to create and view the Images that enable the operator to visualize part or all of a control process.

The Image Editor includes a wide variety of drawing tools that make Image design quick and easy.

The Image Editor operates in an Image window defined during Application Setup. Any drawing in this window can be zoomed and scrolled.

Objects created using the Editor can be linked to tags, so that as the values of a tag change, the objects linked to that tag will change accordingly. In addition, objects can be defined as triggers for tag value input.

Image Editor operations can be performed only by operators with the proper authorization level. While some operators may be authorized to design and view Images, others may only be able to view them. In addition, each object in an Image has its own authorization level.

The following basic activities can be performed using the Image Editor:

- **Image Editing** Image design.
- **Image Animation** Associating Image objects and dynamic properties with tags and the modification of their values.
- **Image Navigation** Navigating within an Image.

Image Navigation is described in *Chapter 12, Image Editor*. This chapter describes the Image Editing activity. *Chapter 13, Image Animation,* describes how Image objects are associated with tags.

This section describes some of the basic concepts used for Image design that should be understood before using the Image Editor facilities.

Objects

Objects are geometric figures or text that together comprise an Image. Objects that are geometric figures can be either open or closed, and both can be filled with specified patterns and displayed in unlimited colors.

Each object can be assigned attributes such as pattern and filling.

In addition to the standard object design features, the following special features are also available:

- Objects can be defined as *Groups*, *Dynamic*, and *Triggers*, both described in *Chapter 13, Image Animation*.
- Wizcon provides you with an Image *cluster library* to make application drawing easier. The library can contain objects (clusters) that you define and can be used in any Image. Library clusters can be defined to include one or more existing Image objects.

- Each Image can include special *widgets* (slider scale objects and Media Player) to enable fast and simple tag value changes. The widgets are custom designed and can be placed in any location in the Image. Widgets are described in more detail in *Chapter 13, Image Animation*.
- Image objects can be associated with alarms. This feature is described in more detail in *Chapter 13, Image Animation*.

Drawing Space

An Image is drawn in a Drawing Space measured in Drawing Units. This measurement can be useful when moving throughout the drawing space and determining object sizes.

The Drawing Space is from -1,000,000 to +1,000,000 Drawing Units.

Image Window

An Image is contained in an Image window. The part of the Image that is displayed in the window depends on the window size, the Image size, and the *zoom level.*

Zoom Level

The zoom level determines how close the Image will be viewed. The smaller the zoom level, the closer the Image will be (objects will be larger), and less of the total Image will be visible.

Note: Although objects may seem larger, their size in terms of Drawing Units does not change.

Any zoom level can be assigned from 1 to 2048. At a zoom level of 64, each Drawing Unit is 0.01 mm on a standard monitor.

Layers

An Image is structured in *layers*. Each layer contains one part of the overall Image. A complete Image is formed by combining its layers. Layers are described in more detail in *Chapter 12, Image Editor*.

Each individual Image layer can be made visible or hidden.

Layers can be added or changed, but not removed.

Zones

Zones are predefined positions in the Image window. The operator can request to jump to any defined zone from anywhere in an Image.

Editor Operations

The Editor can:

Draw	Object drawing.
Align	Align and resize objects.
Undo/Redo	Reverse or delete the last entry. Redo allows you to restore what you reversed.
Find	Search for objects in Image.
Modify	Modification of object attributes (color, pattern, and so on).
Transform	Move, copy, rotate, scale and delete.
View	Scroll, pan, zoom and redraw.
Special	Special management operations.
File	Filing operations.
Dynamic Objects	Designing objects that vary according to tag values.
Tag Value Input	Designing *trigger* objects.

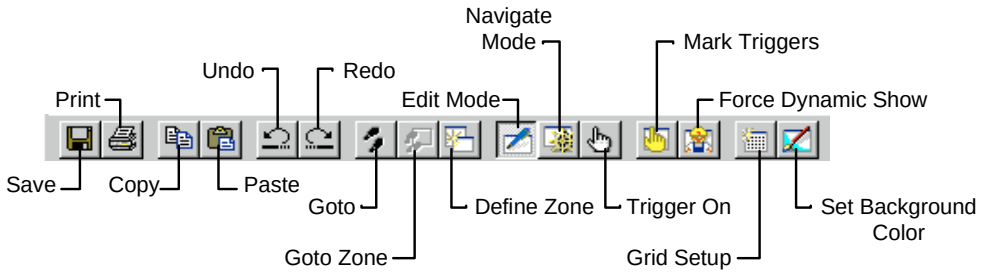
The Modify and Transform operations are based on the Object Operation method, whereby first the object is selected and then the operation is executed.

Wizcon has a main toolbar as well as different toolboxes for drawing, editing and animating your Image. The toolboxes are displayed when you open an Image. You can hide a toolbox by selecting it in the *View* menu of the Image.

The Image contains the following toolbar and toolboxes.

Toolbar

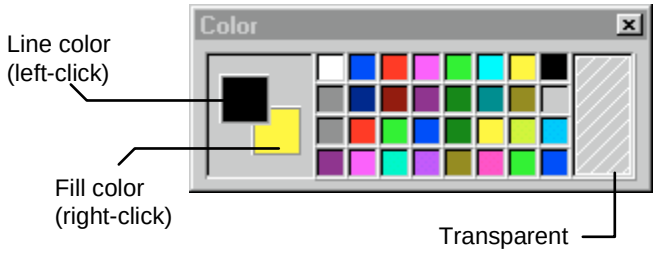
This toolbar is located under the menu and includes shortcuts to menu items such as **Save**, **Print**, **Navigate Mode**, **Goto Zone**, **Grid setup** and **Mark Triggers**.



Color Toolbox

The **Color** toolbox includes 32 colors for background and foreground (text). A left mouse click selects the line color while a right mouse click selects the fill color.

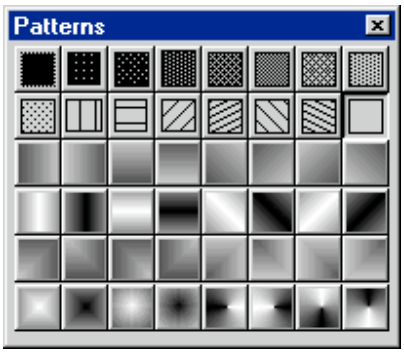
Double-clicking either mouse button opens the *Color* dialog, enabling you to customize any color.



Patterns Toolbox

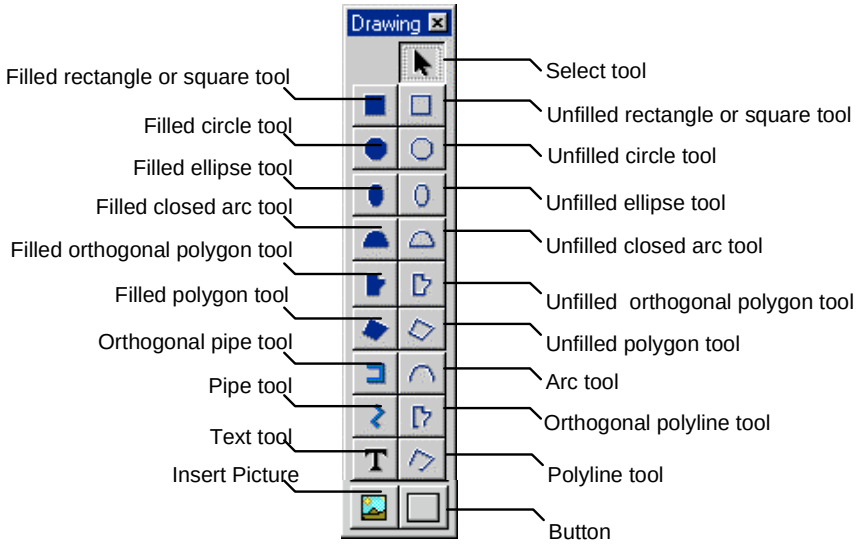
The Patterns toolbox contains 16 different fill patterns, including solid and transparent. The Image drawing patterns also support 32 gradient styles The first color used for the gradient is the foreground color, while the last color used is the background color.

Gradient fills are supported for the following objects: Text, Filled Box - Circle, and Polygon. Please note that pipes do not support Gradient fills.



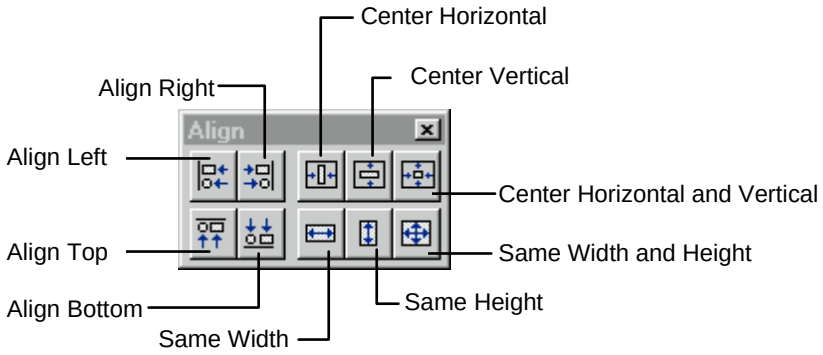
Drawing Toolbox

The **Drawing** toolbox contains simple drawing objects such as **Line**, **Pipe**, **Box**, **Text**, and **Circle**. Both filled and unfilled objects can be selected. The selection and text tool are also included in this toolbox.



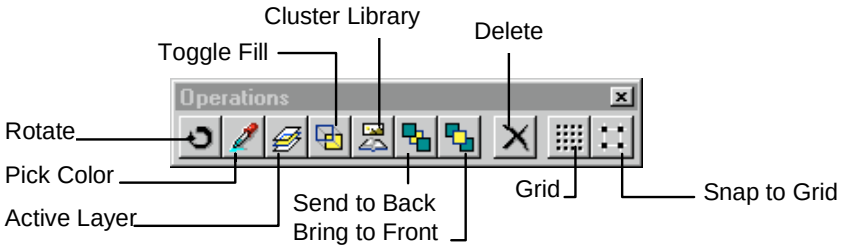
Align Toolbox

The **Align** toolbox enables you to align two or more selected objects. They can be aligned to the Left, Right, Top, or Bottom. The objects can also be centered or resized Horizontally, Vertically or both.



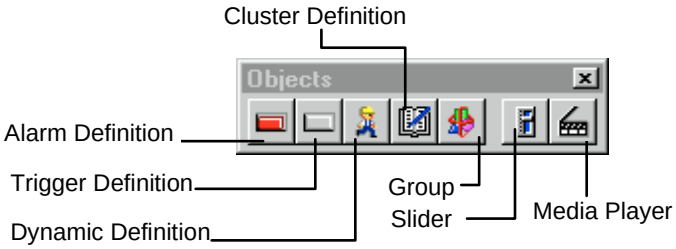
Operations Toolbox

The **Operations** toolbox includes Rotate, Pick Color, Active Layer, Toggle Fill, Cluster Library, Send to Back, Bring to Front, Delete, Grid, and Snap to Grid.



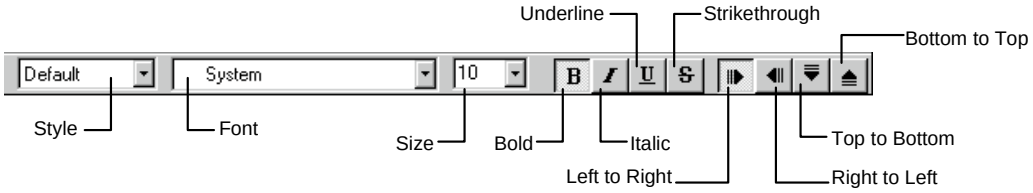
Objects Toolbox

The **Objects** toolbox enables you to define Image objects such as Alarm, Trigger, Dynamic, Cluster Definition, Group, Slider and Media



Font Bar

The **Font** bar enables you to set the text font style for any text object, simple, digital or text table. This toolbar includes the font name, size, direction and different text effects. The text can be bold, italic, underscored or strikethrough.



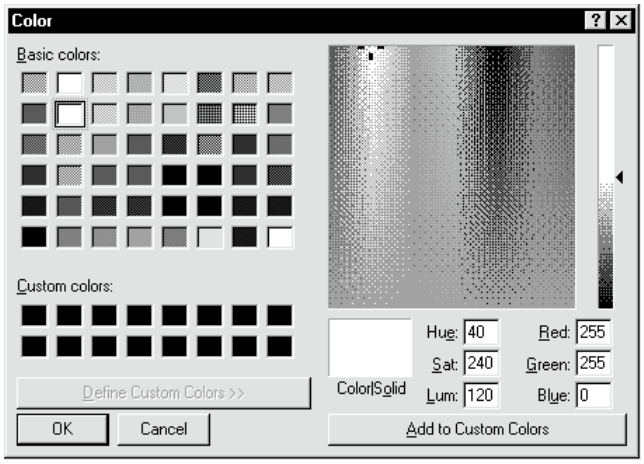
This section describes some of the Wizcon color features.

Full Color Support

Wizcon7 has full color support that is limited only by your operating system and hardware.

Selecting Colors

Double-clicking on any color in the **Color** toolbox opens a common *color* dialog, displayed below, that enables you to select different colors from the ones defined in the toolbox. You can define your own set of colors and customize your toolbox.



Setting the Image Background Color

Image Menu ⇨ Edit ⇨ Set Background Color

The **Set Image Background** feature enables you to set the Image background color.

➤ **To set the background color:**

From the *Edit* menu select **Set Background Color**. The *Color* dialog appears, as displayed on the previous page. Select a color, press **OK** and the background of your Image will display the color you chose.

Get and Save Color Options

Image ⇨ Edit ⇨ Save Colors

Wizcon includes the following options in the Image *Edit* menu:

- Get Colors
- Save Colors

The **. pal* file contains the 16 toolbox colors as well as the additional 16 custom colors from the *Color* dialog. Once you define or customize your colors, you can save them in a *.pal file. To retrieve or *get* the colors you have saved, use the **Get Colors** option.

The menu path is: Image ⇨ Edit ⇨ Get Colors

The *Color* dialog is displayed where you can select the colors from a **.pal file*.

If the Image file name and *.pal file name are the same, the *.pal file is loaded automatically. You can then continue to work with the customized palette every time you open an Image.

Pick Color Tool

Operations Toolbox ⇨ Tool ⇨

Image ⇨ Edit ⇨ Operations ⇨ Pick Color

Select the **Pick Color** tool in the *Operations* toolbox for filling or drawing objects with the exact color used in a different object.

The **Pick Color** tool enables you to sample colors from an area of an Image to designate a new line color or fill color.

➤ **To select the line or fill color using the Pick Color tool:**

1. Select the drawing tool of your choice.
2. Select the **Pick Color** tool, then place the dropper icon on any point in the Image over the desired color.
3. Draw your new object and the object fills with the selected color.

■ To select a new line color:

In the **Color** toolbox, click the required color.

■ To select a new fill color:

In the **Color** toolbox, right click the required color.

The toolbox resets to the last drawing tool that was used, and the color becomes the default color for that drawing tool.

The following sections describe some basic concepts frequently used when designing Images.

Active Layer

As mentioned earlier in this chapter, an Image is composed of layers. Drawing is done one layer at a time. Any layer being worked on is referred to as the *active* layer. The layer that always exists by default is called the *base* layer.

The active layer name is displayed in the window title together with the Image name and the current scale.

➤ **To select an active layer:**

Activate the **Active Layer** tool in the toolbox or select **Active Layer** from the *Layers* menu.

Mouse Buttons

Generally, the left button is used to draw objects. Click the left button on specific points in the Image to start and end objects. The right button is generally used to cancel operations or complete them (to close a figure, de-select an object, and so on.).

Cursor

When a drawing operation is selected, the cursor will take on the appearance of the icon representing the operation that was selected.

Filling

Any figure can be filled with a pattern. A pattern is structured as a foreground (text) color over a background color. A transparent attribute can also be selected. Open figures will be filled up to the line connecting the endpoints of the figure.

Orientation

Some figures are drawn in an orthogonal orientation (only in the horizontal, vertical, or 45-degree directions). Once such a figure is drawn, it can be rotated to any angle.

Attributes

Each figure (circle, square, polygon, and so on.) is assigned a set of attributes, including colors, filling and patterns.

An important Image Editor drawing feature is that once you draw a figure with specific attributes, each time you select that operation again, the figure will be drawn with the same attributes you selected previously.

Continuous Design

After an object is drawn, a new object with the same attributes can be drawn immediately without having to select the operation again.

Multiple Windows

Several Image windows may appear on the screen simultaneously. One toolbox of each type will appear for each different Image. For example, if you opened three windows for the same Image called DEMO, one toolbox of each type will serve all three windows.

Design Procedure

The following sections describe how various figures are drawn. All figures should be drawn only after an active layer, the type of figure, the color, and the pattern have been selected. Remember that the left button is always used, unless otherwise specified.

➤ **To create figures:**

1. Select an active layer.
2. Select a figure type.
3. Select colors.
4. Select a fill pattern.
5. Draw.

Note: In addition to using the tools in the toolboxes, you can also draw polygons, circles, and other shapes, by selecting the shape in the Image Edit menu.

You can design, draw, and modify your application by selecting the appropriate tools in the Image. The **Drawings** toolbox contains simple drawing objects such as Line, Pipe, Box, Text and Circle. You can draw both filled or unfilled objects. You can also assign text to your Image by using the text tool. Drawing with specific shapes is described in more detail, on page 12-22.

Note:

- *To change the colors of a selected object, select a new color in the color toolbox, as described on page 12-8.*
- *To revert to **Select** mode and cancel an operation after selecting a tool, right-click in the Image area.*

Object Selection/Deselecting

Following are some object selection tips:

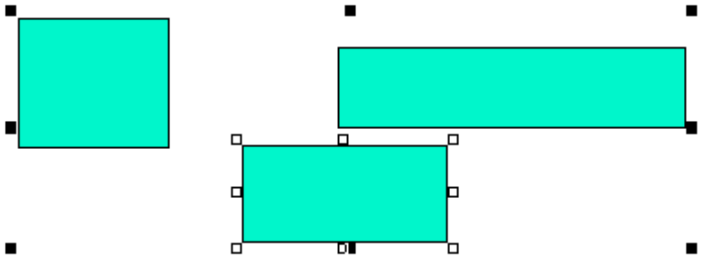
- Choose the **Select** tool to select any object (for size or move operations).
- Select several objects by holding down the left mouse button on an empty point in the Image and dragging a rectangle around the objects you wish to select.
- Add an object to those objects already selected by holding down the <Shift> key while clicking on the object.
- Deselect objects by clicking on an empty part of the Image area.
- Deselect the last selected object by pointing to **Select** in the *Edit* menu and selecting **Deselect Last**.

Note: Right-clicking sets the object automatically to select mode and cancels the move operation.

Aligning Objects

Objects can be selected an aligned using one of the Wizcon alignment tools. All the objects are aligned or resized according to the position or size of the first object selected. This object is marked with marked with eight hollow handles, as shown below.

The *Align* menu with all its options, is described in more detail on page 12-43.



➤ **To align objects:**

1. Determine the first object, and click to select.
2. Select the other objects to be aligned to the first by holding down the <Shift> key and clicking them.
3. Select **Align** from the *View* menu. The *Align* menu is displayed.
4. Select a tool from the menu. The selected objects will be aligned accordingly.
5. Click an empty part of the Image to deselect the objects.

Moving/Scaling

Scale by selection of object and handles

➤ **To move an object:**

Hold down the left mouse button on object and drag to the required position.

To copy the object, move/scale it with the <Ctrl> key pressed.

Object Sensitive Menus

- Right-click on any object in the Image to select the object. A popup menu is displayed.
- Click in an empty space in the Image to display a general Image menu.
- The popup menu deselects previously selected objects.

Image Edit Menu

The Image *Edit* menu is the graphic tool of Wizcon 7. It is used to create and view the Images that enable you to visualize part or all of a control process. The following menu items are available:

Select	To do
Undo **Redo**	Reverse or delete the last entry. Immediately after you undo an action, the **Undo** command changes to Redo, allowing you to restore what you reversed.
Copy to Clipboard	Transfer data between applications.
Paste from Clipboard	Paste objects from the Clipboard to an Image.
Insert Picture	Insert a picture (*.jpeg, *.jpg).
Find	Find and go to an object that matches the search text.
Find Next	Search for the next occurrence of the last search string.
Align	Align two or more objects at right top or bottom. Center or resize horizontally, vertically or both.
Select	Select objects in the Image.
Operations	Enables you to perform editing and animation operations in your Image.
Drawings	Enables you to draw and add text by using the Polyline, Box, Circle, Pipe, Text , and Pick color tools. You can assign trigger objects with the button tool. Determine media player or slider properties.
Set Background Color	Set the Image background color.
Get Colors	Retrieve customized colors.
Save Colors	Save customized colors.

This section describes how to draw with the tools in the **Drawing** toolbox. The tools have been divided into groups, each with their own drawing procedure.

- Lines, orthogonal polylines, filled and unfilled; polygons and orthogonal polygons, as described below.
- Filled and unfilled; rectangles, squares, orthogonal rectangles, ellipses and circles, as described on page 12-24.
- Arcs and filled and unfilled closed arcs, as described on page 12-25.
- Pipes and orthogonal pipes, as described on page 12-27.

Using the **Text** tool is described on page 12-28.

Drawing Lines and Segmented Shapes

This section describes how to draw with the following group of tools:

Use	To draw
	Lines (regular, straight).
	Orthogonal Polylines (lines drawn in vertical, horizontal and at 45 degrees).
	Unfilled Polygons.
	Filled Polygons.
	Unfilled Orthogonal Polygons (Polygons drawn in orthogonal and vertical, horizontal and at 45 degrees).
	Filled Orthogonal Polygons.

➤ **To draw:**

1. In the **Drawings** toolbox, click the appropriate shape.
2. Click the left button on the start point.
3. Click the left button on successive end points.
4. Click the right button and the last point will automatically be connected to the start point, closing the polygon.
5. Right-click in the Image to deselect the tool.

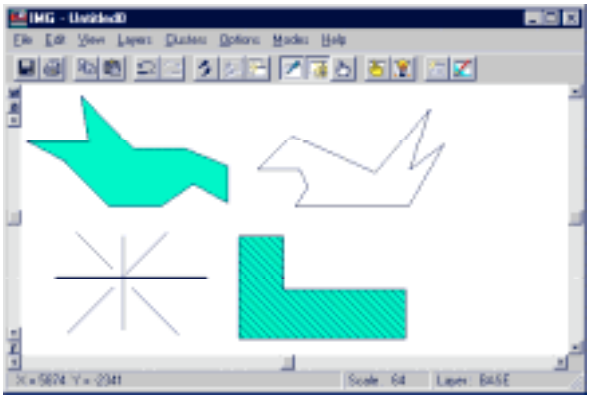
If you click the right button before starting to draw, the **Select** tool will be activated.

You can create an arc instead of a straight line.

➤ **To create an arc:**

Click on a line end while holding down the <Shift> key. The line between the last two points will be marked by the system as an arc, which can then be adjusted to the required radius and set by clicking the left button.

The following is an example of shapes drawn with some of the tools in this group:



Drawing Rectangles and Ellipses

This section describes how to draw with the following group of tools:

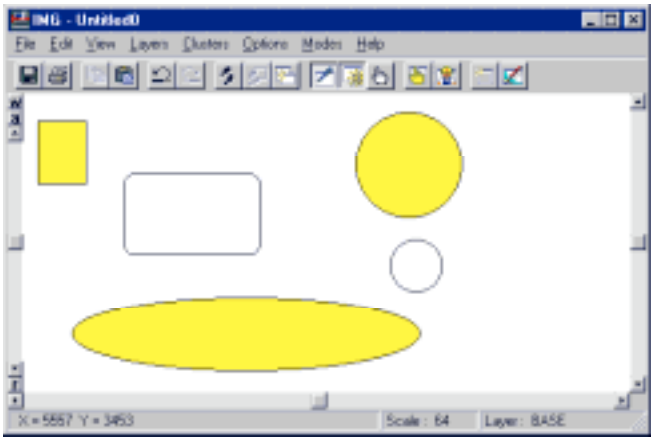
Use	To draw	Tips
	Filled rectangles or squares (orthogonal rectangles)	
	Unfilled rectangles or squares (orthogonal rectangles)	
	Orthogonal rectangles with round corners.	Round cornered rectangles will become sharp-cornered rectangles if they are rotated.
	Filled orthogonal rectangles with round corners.	Same as above.
	Filled ellipses.	Moving cursor in vertical direction creates a thin ellipse. Moving horizontally creates a wide ellipse.
	Unfilled ellipses.	Same as above.
	Filled circles.	Click on center point and drag outwards.
	Unfilled circles.	Same as above.

➤ **To draw:**

1. In the **Drawings** toolbox, click the appropriate shape
2. Position the mouse pointer where you want to start drawing.
3. Drag diagonally.
4. Release the mouse button.
5. Right-click in the Image to deselect the tool.

If you click the right button before starting to draw the select tool will be activated.

The following is an example of shapes drawn with some of the tools in this group:



Drawing Arcs

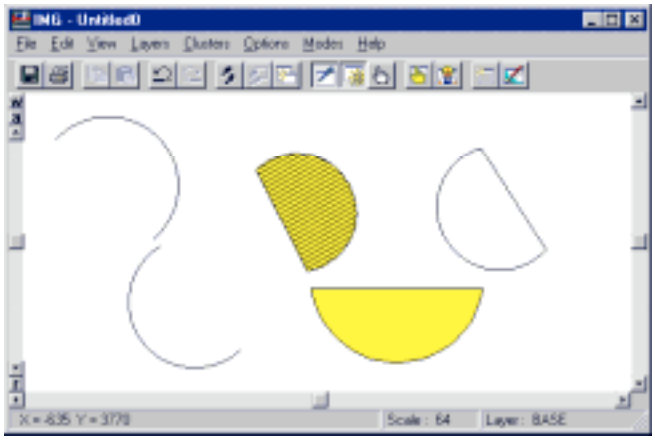
This section describes how to draw with the following group of tools:

Use	To draw	Tips
	Filled closed arcs.	The angle of an arc or closed arc may be affected if the arc is scaled.
	Unfilled closed arcs.	
	Arcs.	

➤ **To draw an arc:**

1. In the **Drawings** toolbox, click on the appropriate tool.
2. Position the mouse pointer where you want to start drawing.
3. Drag to end point.
4. Release mouse button.
5. Move the mouse to the desired radius point and left-click the mouse button.
6. Right-click in the Image to deselect the tool.

The following is an example of shapes drawn with some of the tools in this group:



Drawing Pipes

This section describes how to draw with the following group of tools:

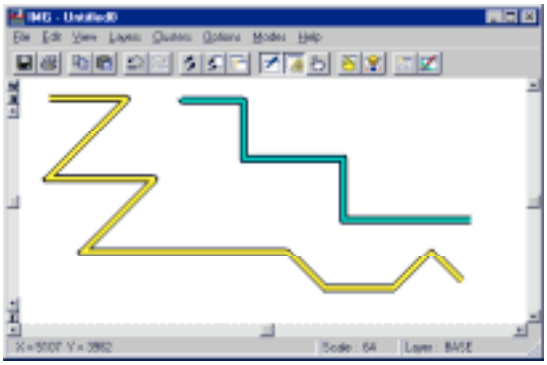
Use	To draw
	Pipes.
	Orthogonal pipes. (Connected segments drawn in vertical, horizontal and at 45 degrees).

Note: At any stage in the drawing sequence, the thickness of the pipe can be controlled using the plus (+) and minus (–) keys.

➤ **To draw a pipe:**

1. From the **Drawings** toolbox, click on the appropriate pipe tool.
2. Click the left mouse button on the start point.
3. Click the left mouse button on successive end points.
4. Right-click when the shape is complete.
5. Right-click in the Image to deselect the tool.

The following is an example of shapes drawn with some of the tools in this group:



Text

Drawings Toolbox ⇨

Image ⇨ Edit ⇨ Drawings ⇨ Text

➤ **To use the text tool:**

1. From the **Drawings** toolbox, click on the text tool .
2. Enter text in the *Text* dialog.
3. Click **OK**. The text will appear at the specified location on the screen.

The other **Text Types** field is used for the dynamic display of tag values. This field is explained in *Chapter 13, Image Animation*.

When the text is entered and confirmed, it will appear at the specified location on the screen.

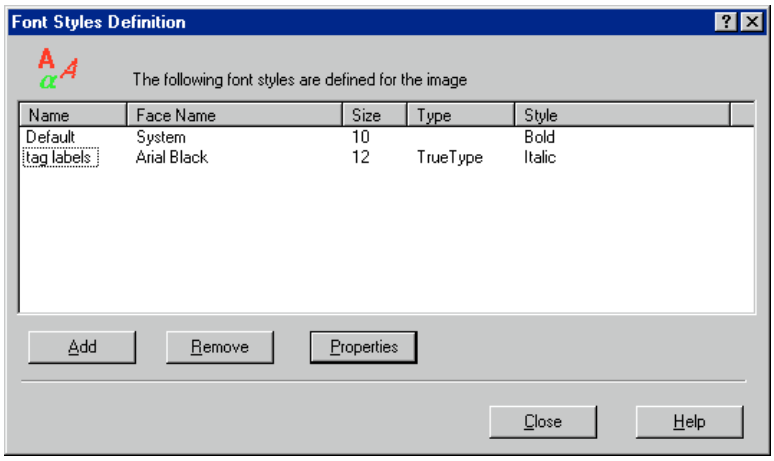
In Wizcon 7, any text object, simple, tag value or text table, can have its own font style. The **Font** bar reflects the font style that is going to be used for the next text object. It also reflects the font style of the current selected, single, text object. Changing the font style while a single text object is selected will change that object's style. Predefined text styles can be used for easy uniform texts as labels, titles and so on.

It is possible to set a style to text and then change only part of the style properties. If a style is changed, all texts with that style are changed in any property that was not modified for that text.

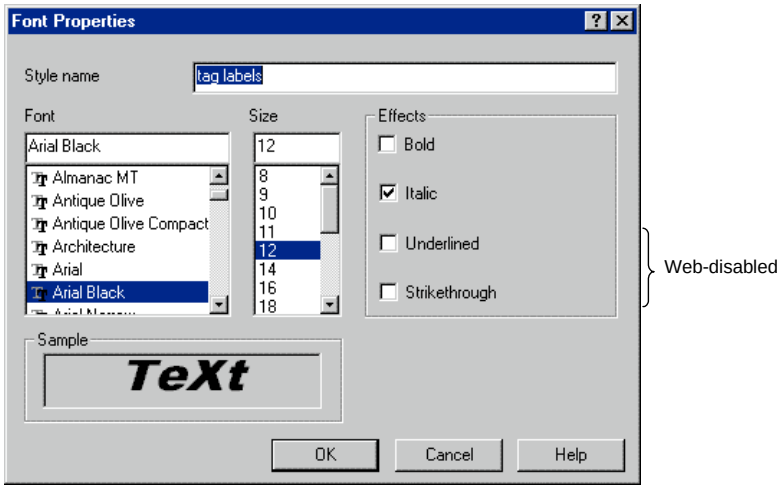
The text object colors are selected and set as any other object.

➤ **To define font styles:**

1. From the *Options* menu, select **Fonts Definition**. The *Font Styles Definition* dialog is displayed:



2. Activate the **Add** button. The *Font Properties* dialog is displayed.



3. Specify the required font style from the following options and click **OK** to save your definitions and close the dialog.

Style name	Selected from list. Reflects the font style that is going to be used for Text objects. Predefined text styles can be used for easy uniform texts as labels, titles and so on.
Font Face Name	Can be bitmap or TrueType - selected for available fonts (system dependent). List of available system fonts.
Font size	For bitmap fonts you can select from sizes available for that face name. If another value is entered, the Image will use the best fit. For TrueType fonts, the 14 size is translated as 1,000 word units in 64 scale.
Effects	Select from the following options: **Bold**: (font dependable), **Italic**, **Underline** and **Strikethrough**. *Note that Underline and Strikethrough are not applicable on the Web.*

Sample Text Type any text to obtain an example of the way the text will appear in the Image. The text example that you type appears in the example box below this field.

You can activate the **Properties** button in the *Font Styles Definition* dialog to reopen the *Font Properties* dialog where you can change your font definitions.

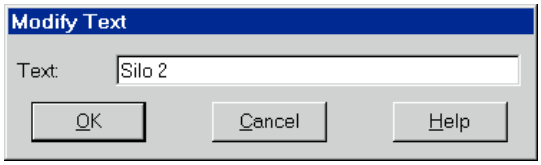
It is important to note that when using bitmap fonts, since these fonts cannot be scaled or rotated, changing the zoom would not change the size of the font. It is recommended to place bitmap text in layers using only one scale level.

Modifying Text

Text in an Image can be changed by selecting the text you want to edit and then activating the **Text** tool in the **Drawing** toolbox.

➤ **To modify text:**

1. Select text and activate the **Text** tool. The *Modify Text* dialog is displayed:



2. The text you selected to edit will appear in the **Text** field.
3. Change the text and activate the **OK** button to cause the new text to replace the old text.

For tag value, text table, or date/time text, the appropriate dialog is displayed in which you can change the text attributes. (For text tables, you will be able to select a different file to use.)

Image Editing operations are performed to alter the current state of an object or groups of objects in the Image. The editing operations you can perform include the following types:

Select	To select objects in an Image for modification, transformation, or clipboard operations.
Undo/Redo	To reverse or delete the last entry. **Redo** allows you to restore what you reversed.
Find/Find Next	To search for objects in an Image.
Modify	To modify object attributes (color, pattern, filled, and so on.).
Transform	To change the position and dimensions of objects (move, rotate, scale and delete).
Clipboard	To copy objects from the clipboard to an Image, or from an Image to the clipboard.

The basic editing sequence is as follows:

- Select an object or several objects.
- Select an editing operation.
- Perform the operation.

The following sections describe each of the editing operations and operation stages.

Selection

Drawings Toolbox ⇨

Menu ⇨ Edit ⇨ Select

➤ **To select an object**

1. Click the **Select** tool .
2. Click on the object you want to select. The object will be selected, and in addition, any other selected object will be deselected.

- To select several objects:

  Start from an empty point in the Image, hold down the left mouse button and drag a rectangle around the objects you wish to select.

- To add an object to existing selection:

  Click the mouse button while holding down the <Shift> key.

  Handles (small squares) appear on the corners and sides of an object's highlighting box when the object is selected.

  Use the square handles to resize and transform an object. Click on a selected object and the handles change to arrows, which then permit you to resize an object.

- To move selected objects:

  Click inside the object or bound rectangle for a group of objects, hold the mouse button down and drag to the desired location.

Note:

- *Before or after you draw a shape, if the select tool is not activated, clicking the right mouse button will cause the tool to be activated.*
- *When more than one object is selected, the objects will act as a single object for move, scale, and on.*

Deselecting

To deselect an object, right-click anywhere in the Image.

If several objects are selected, you can deselect the objects in reverse order.

➤ **To deselect in reverse order:**

In the *Edit* menu, point to **Select** and select **Deselect Last** (the last object you selected will be deselected first, the second-to-last next, and so on).

In addition, when you select objects one at a time, other selected objects will be deselected automatically.

Copying Objects

You can copy an object or a group of objects in one of two ways:

➤ **To copy an object or group of objects:**

1. Select the object or objects you want to copy.
2. Hold down the <Ctrl> key and drag the object (or the bounded rectangle for a group of objects), to the required location. A copy of the object(s) will appear.

or,

1. Select an object, or group of objects.
2. Press the <Ctrl-Insert> key combination to copy the object(s) to the clipboard (the object(s) will not immediately appear in the Image).

➤ **To paste the object(s) from the clipboard:**

Press the <Ctrl-Shift> key combination (and follow the instructions provided in the section called *Clipboard Operations*, on page 12-49.

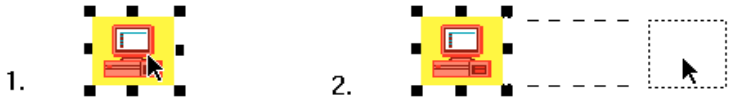
Moving and Scaling Objects

When an object is selected, eight handles (small boxes) will appear around the object to indicate that it is selected, as in the following illustration:

➤ **To move an object or group of objects in the Image:**

1. Select the object(s) you want to move.
2. Click inside the object (or bounded rectangle for a group of objects) hold the mouse button down and drag the object(s) to the desired location.

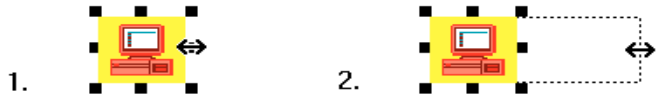
The following illustration shows how moving is performed:



➤ **To scale an object or group of objects in the Image:**

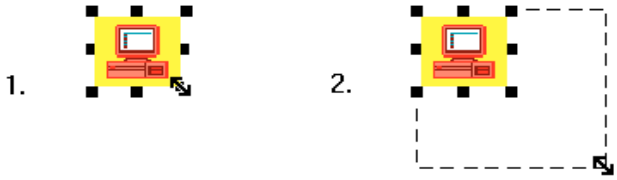
1. Select the object(s) you want to scale.
2. Click on one of the eight handles of the object (or bounded rectangle, for a group of objects) hold the mouse button down and drag the handle to resize the object(s).

The following illustration shows how scaling is performed:



➤ **To resize the object(s) proportionally:**

Click and drag any corner handle in a diagonal direction, as in the following illustration:



Note: To terminate a move or scale operation, press the <Esc> key.

Undo/Redo

The **Undo** and **Redo** operations are available for Image drawing operations. This applies to actions such as delete, scale, rotate and change attributes (color) of an object. The **Undo** command reverses or deletes the last entry.

Immediately after you undo an action, the **Undo** command changes to **Redo**, enabling you to restore what you reversed. Up to 50 levels of **Undo**/**Redo** operations are available.

➤ To undo

1. Select object you want to undo.
2. Click on the **Undo** tool in the Image toolbar.
3. The action is reversed.

You can also undo an action by selecting **Undo** from the Image *Edit* menu, or pressing <Ctrl Z>.

➤ To redo

1. Select the object you want to redo.
2. Click on the **Redo** tool in the Image toolbar.
3. Your action is restored.

You can also redo an action by selecting **Redo** in the Image *Edit* menu, or pressing <Ctrl Y>.

Note: The Align feature does not support the Undo feature. Copying objects using <Ctrl C> does not support the Undo feature.

Find\Find Next in Image

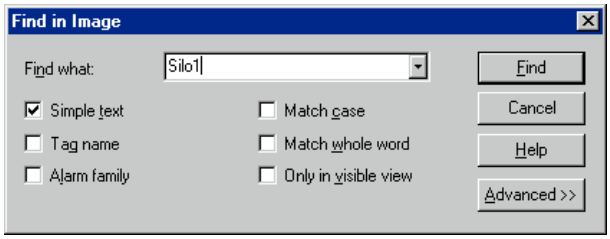
Using the **Find** option you can search and go to an object that matches the searched text. This feature is available in **Edit** mode only. The **Find** command opens the *Find* Dialog (see below) while the **Find next** searches for the next occurrence of the last search string.

You can activate the commands using the following activation keys:

Image ⇨Edit ⇨Find: **Ctrl F**

Image ⇨Edit ⇨Find Next: **F3**

The *Find in Image* dialog is displayed:



You can enter search strings up to 256 characters

Search options are common for all Image windows

The following is a list of search categories and their description:

Simple text

Tag name This includes tag names in Dynamic object, Tag value, Trigger, Text table and Widgets.

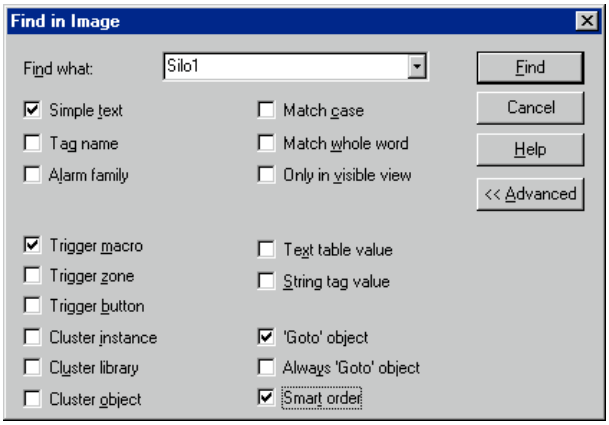
Alarm family As defined in alarm object.

Match case The search is made for full match of case of letters, otherwise, strings are compared ignoring the case.

Match whole word The search is made to find the exact full text, all characters are accounted for. Otherwise, the search is made to find the occurrence of the search string inside any text.

Only in visible view If this option is checked, the search is limited to the visible part of the Image inside the Image window.

Pressing the **Advanced** button in the *Find* dialog opens the lower portion of the dialog with advanced search options.



The following advanced search options are available:

Trigger macro name The name of the macro that a trigger activates.

Trigger zone name The name of the zone that a trigger *goto*.

Trigger button Any name in trigger button including title and legend on each button.

Cluster instance The instance name of a cluster.

Cluster library The library name of cluster instance.

Cluster object The cluster object name as appearing in the library.

Text table value	The current string value matches the search string.
String tag value	The current string tag value matches the search string.

Note:

- *For Text table and String tag the Simple text option must be also checked.*
- *If searching for trigger zone or macro, then the search is also made in trigger buttons for such a match.*
- *Options can be set independently.*

Other Advanced Search Options

Other search options give you control of the way the actual search is made.

'Goto' object	Check so that Wizcon will automatically navigate to the found object to bring it into the middle of the current Window; the scale will not be changed.
Always 'Goto' object	Causes Wizcon to navigate to the found object, even if it already was inside the visible part of the Window.
Smart order	Causes a geometric search to be perform. The Image is searched from 'left to right' in strips of the same size of the current open view. In many cases, such search is more intuitive, especially if the Image is divided into zones with a corresponding layout. If this option is not checked, the search is simple, meaning that the search is by the order of objects in the Image, from the first object created to the last one.

Notification Message

If a search fails, a notification message is displayed with the searched string.

Modification

As mentioned earlier, Modify operations are used to change the appearance of an object (color, fill pattern and order for overlapping objects).

The following sections describe each of the **Modify** operations.

Toggle Fill

Operations Toolbar ⇨

Menu ⇨ Edit ⇨ Operations ⇨ Toggle Fill

This operation is used to fill and unfill objects. The **Fill** tool operates as a toggle.

Note: When an object is unfilled it still retains its fill attribute, which can be restored at any later time.

For segments when the right button is clicked on the **Fill** tool, it toggles between setting each segment element to its original fill or unfill attribute.

➤ **To use the Toggle Fill tool:**

1. Select an object and click the left mouse button on the **Toggle Fill** tool in the **Operations** toolbox.

   Or,

1. From the *Operations* Menu click **Toggle Fill**.

Bring to Front

Operations Toolbar ⇨ .

Menu ⇨ Edit ⇨Operations ⇨ Bring to Front

The **Bring to Front** option enables you to place objects in the front of your Image. You can change the way objects overlap or lie by shifting the object to the front. Objects are placed with the first object you created on the bottom and the last object you created on top. You can shift the order of the objects by using the **Bring to Front** option or **Send to Back** option.

➤ **To bring objects to the front:**

Select the drawing object you want to bring to the front and click the **Bring to Front** tool in the **Operations** toolbox.

Or,

From the *Operations* Menu click **Bring to Front**. The selected drawing object is placed in front of other overlapping objects.

Send to Back

Operations Toolbar ⇨.

Menu ⇨ Edit ⇨Operations ⇨ Send to Back

The **Send to Back** option enables you to place objects in the back of your Image. You can change the way objects overlap or lie by shifting the object to the back. Objects are placed with the first object you created on the bottom and the last object you created on top. You can shift the order of the objects by using the **Bring to Front** or **Send to Back** options.

➤ **To send objects to back:**

Select the drawing object you want to send to the back and click the **Send to Back** tool in the **Operations** toolbox.

Or,

From the *Operations* menu click **Send to Back**.

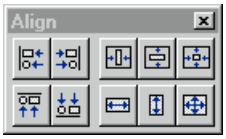
The selected drawing object is placed in behind other overlapping objects.

Aligning Objects

The *Align* menu allows you to align an object with another object. This menu also enables you to resize objects.

Edit Menu ⇨ Align

Image ⇨View ⇨ Align toolbar



There are several ways to align objects in Wizcon 7. Two or more selected objects can be aligned to Right Top or Bottom. They can also be centered or resized Horizontally, Vertically or Both.

You may also use the **Align** toolbox to align and resize objects.

Use	To
	Align objects by their left edges.
	Align objects by their right edges.
	Align objects by their centers (vertically).
	Align objects by their middles (horizontally).
	Align objects both horizontally and vertically.
	Align objects by their tops.
	Align objects by their bottoms.
	One or more objects can be resized to the same width.
	One or more objects can be resized to the same height.
	One or more objects can be resized to both same height and width.

Note: The Align feature does not support the Undo option.

Transformation

Transform operations are used to change the position and dimensions of an object. Each of the Transform operations is discussed in the following paragraphs.

Copy Mode

Menu ⇨ Modes ⇨ Copy On

The **Copy On** mode enables the duplication of objects in Transform operations.

When the **Copy On** mode is activated, a Transform operation will preserve the original object. When the **Copy** mode is not activated, a Transform operation will discard the original object (only the transformed object will remain).

➤ **To toggle the Copy On mode:**

Select **Copy On** from the *Modes* menu. A check beside the item indicates it is active.

In addition to the **Copy** mode, the following methods can also be used to copy objects:

- In the **Select** mode (described in the *Selection* section on page 12-33), when an object or group of objects is selected for a move or resize operation while the <Ctrl> key is held down, the **Copy** mode is activated for that operation.
- To copy an object to the clipboard:

  Press the **Ctrl-Insert** key combination.

- To paste an object from the clipboard:

  Press the **Shift-Insert** key combination. (For more details about clipboard operations, refer to the *Clipboard Operations* section on page 12-49.)

Move

Image ⇨Operations ⇨ Move

This operation is used to move objects from one location to another. As opposed to the move operation described in the *Selection* section mode on page 12-33, this move operation is useful for long distance moving (from zone to zone, area to area, etc.), since the mouse button does not have to be held down while dragging the object.

➤ **To move an object:**

1. Select one or more objects.
2. From the *Edit* menu, point to **Operations** and select **Move** from the popup menu**.**
3. Click on the left mouse button. The cursor changes to a bi-directional arrow.
4. Click the left button on a starting point.
5. Move the frame of the object(s) to the desired location and click the left button.

Clicking the right mouse button sets the object automatically to **Select** mode and cancels the move operation.

Once a starting point for the Move operation has been established, click the right button to cancel the last part of the operation. When no starting point has been established, the right button can be used for single object selection.

Operations Toolbar ⇨

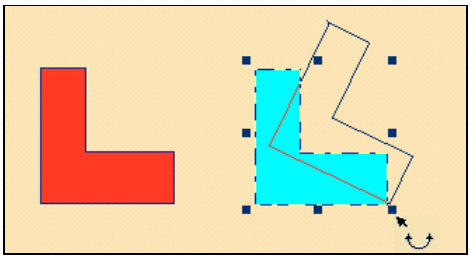
Menu ⇨ Edit ⇨Operations ⇨ Rotate

The Rotate Operation enables you to turn an object or group of objects clockwise or counter clockwise.

➤ **To rotate an object:**

1. Select an object.
2. Select **Rotate** from the *Operations* menu or the **Rotate** tool from the **Operations** toolbox.
3. Click the left button on the rotation pivot and see the skewing handles.
4. Move the frame of the object around the pivot until the object is rotated to the desired orientation and click the left button.

Once a starting point for the Rotate operation has been established, click the right button to cancel the last part of the operation. When no starting point has been established, the right button can be used for single object selection.



Note: Ellipses can not be rotated sideways (slanted).

Operations Toolbar ⇨

Menu ⇨ Edit ⇨Operations ⇨ Delete

This operation is used to delete objects from an Image.

➤ **To delete:**

Select one or more objects and:

- Select **Delete** from the *Operations* menu.
- Click the **Delete** tool in the **Operations** toolbox.
- Press the <Delete> key on the keyboard.

The object is removed from the Image.

The Clipboard is an operating system facility used to transfer data between applications.

Wizcon enables you to use the Clipboard as a convenient way to transfer graphic objects from the Wizcon application to external applications, vice versa, and from one Wizcon Image to another.

In Wizcon 7, the Clipboard can be used when working with Images and the Clipboard items appear in the *Edit* menu of the Image. To use the Clipboard, the **Edit** mode must first be activated, by selecting **Edit** from the *Modes* menu.

➤ **To copy an object from an Image to the Clipboard:**

Select an object(s), and then select **Copy to Clipboard** from the *Edit* menu, or press the <Ctrl-Insert> key combination. The object will be copied to the Clipboard for later use by Wizcon or any other external application.

➤ **To paste (transfer) an object from the Clipboard to an Image:**

Select **Paste from Clipboard** in the *Edit* menu, or press the <Shift-Insert> key combination. Then, to place the object, you can choose between the following options:

- Double-click on the point in the Image where you want the object to appear. The object will automatically be pasted at the location you selected, in its original size.
- Click once to set the size and location of the object. You can then define the area which the graphic object will fill, using an outline box. After the initial click, simply move the outline box, by moving the mouse, to the end point of the object, and click again.

Note that if you start by clicking on a high point, and move down and click on a lower point, the graphic object will appear upside-down (unless that object is in the bitmap format).

Wizcon supports the following data formats:

Image Parameters

This format is used by Wizcon to create Image objects. Each object in a Wizcon Image includes several parameters (such as Dynamic, Trigger, etc.) that tell Wizcon how that object behaves.

If this format is used, when transferring an object from/to the Clipboard, that object will include special Wizcon Image parameter information.

Bitmap

Bitmap is a graphic format that tells the application to consider the graphic element (whether it is text or drawing) as a solid unit, including its background.

The bitmap graphic element is captured by pixels and any mark appearing within the captured area will be included in the final element.

For a Copy to Clipboard operation, Wizcon will copy a selected object(s) in all of the formats described above.

For a Paste from Clipboard operation, Wizcon will paste the Clipboard object first in the Image parameter format (if the object is in that format). If the object is not in the Image parameter format, Wizcon will paste the object in the bitmap format. If the object is not in this format, Wizcon will not paste the object.

Note: If you paste an object from the clipboard, the imported object will be placed in the current active layer.

In addition, if you paste a text object from the clipboard, and the original font of the object you pasted does not exist in your system, the object will appear in the current active font.

The following editing operations can be applied to objects pasted from the Clipboard to a Wizcon Image:

Operation	Bitmap
Move	Yes
Size	Yes
Rotate	No
Fill	No
Color	No
Dynamic	Yes
Trigger	Yes

Grouped Objects

Grouping objects combines two or more objects so you can work with them as though they were a single object. You can flip, rotate, and resize or scale all the objects in a group as a single unit. You can also change the attributes of all objects in a group at one time. For example, you can change the fill color to all objects in the group in a single step.

Grouped objects can be edited the same way as any other object, but cannot be nested (a group cannot include another group). A grouped object can also be ungrouped to separate its original elements.

Note: Any object in a segment, that is defined as a trigger object, will function in the Trigger mode the same as when it is not included in a segment. For more information about trigger objects, see Chapter 13, Image Animation.

Grouping and Ungrouping Objects

➤ **To group objects:**

1. Click the select tool and then drag to select the drawing objects you want to group.
2. Click the left mouse button on the **Group** tool in the **Objects** Toolbox.

   Or,

   Point to **Operations** in the *Edit* menu and select **Group**.

➤ **To ungroup objects:**

1. Select the grouped objects.
2. Click the right mouse button on the grouped objects and select **Ungroup** from the popup menu.

   Or,

   Point to the **Operations** in the *Edit* menu and select **Ungroup**.

Wizcon provides the Cluster Library feature which uses object oriented technology to simplify and speed up application design and maintenance. The library includes a variety of **Clusters**. A Cluster is an object-class with all its behavior, including parameters, the graphical shape and tag and alarm functions. For example, a valve cluster may include the valve's graphic shape, a status tag, an alarm condition, and an open/close trigger operation. You can easily place clusters in an application and reuse them as needed.

Clusters can be small or large. They can be simple, such as circles or pumps, or complex, such as a complete sub-application that includes tanks, pumps and valves.

Working with clusters involves two stages:

- Define clusters and add them to libraries. This task requires knowledge of all Wizcon components (such as tags, alarms, communication drivers and so on) and is usually performed by application designers.
- Use existing clusters and place them in the application. This task requires minimum knowledge of Wizcon and no programming skills.

Once you place a cluster in your application, you create an *instance*. One cluster can have many different instances, each with the specific characteristics (or "personality") that you define according to your application's needs. For example, each instance can be associated with a different set of tags and alarms that you define when creating a new instance in the application. The action of creating a separate instance of the object or function is called *instantiation*.

A unique editing feature allows you to modify any object and simultaneously apply the changes to all applications' diagrams. For example, if you need to modify a runtime supervision in a certain pump type, you can redefine the pump cluster in the library. Then you can Rebuild all instances of that pump to incorporate the changes made to the cluster definition.

Wizcon includes a set of ready-to-use cluster libraries. For more information about these libraries, refer to *the Wizcon Clusters Library* booklet.

Why and When to Use Clusters

It is recommended to use clusters whenever possible. Working with clusters is much easier than working with graphics, tags, and alarms separately. Besides saving time, you can use an object that has been already approved for work.

The following sections explain how to do the following:

- Define clusters and add them to the library.
- Place existing clusters in your application.
- Delete clusters from the library.
- Copy clusters from one library to another.
- Rebuild cluster instances.
- Work with the Wizcon basket.

Objects Toolbar ⇨

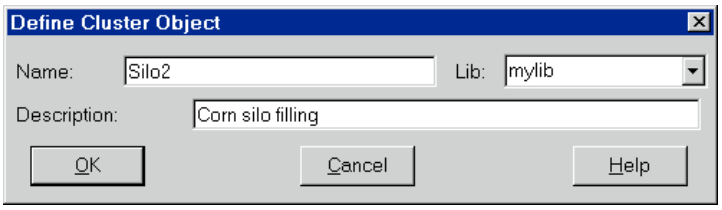
Menu ⇨ Clusters

➤ **To define a cluster and add it to a library:**

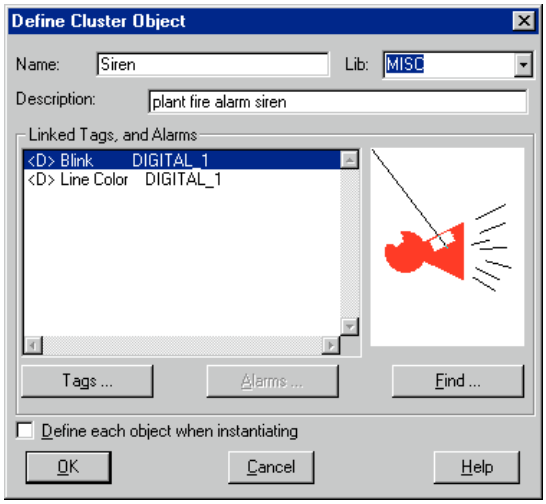
Select the graphic object in the Image that you want to include in the cluster and select one of the following:

- **Define** from the *Clusters* menu in the Image.
- The tool from the **Objects** toolbox.
- Right-click and select **Define Cluster** from the popup menu.

If no tags or alarms are associated with the graphic objects that are selected in the Image (meaning that the object was not defined as a dynamic, trigger, or alarm object), the *Define Cluster Object* dialog is displayed:



If the object you selected in the Image is associated with tags or alarms (the object was defined as a dynamic or trigger object), the *Define Cluster Object* dialog is displayed:



The following options are available:

Name — Specifies the name of the cluster (up to 15 characters).

Lib — Specifies the name of the library in which the cluster will be placed. To select from existing libraries, click on the arrow to the right of the field.

Description — Specifies a brief description of the cluster (up to 40 characters).

Note: The following fields and buttons appear in the dialog box only if the object is defined as a dynamic, trigger, or alarm object.

Linked Tags and Alarms

This listbox contains a list of tags and alarms associated with the object you selected, and the type of the object with which the tags and alarms are associated.

The object types, enclosed in brackets (<>), include:

- **D** for dynamic
- **G** for trigger
- **A** for alarm (*Not applicable on the Web*)
- **W** for widgets (tag value sliders)
- **T** for text table
- **N** for digital, date/time, and string displays
- **t** for dynamic text tables
- **n** for dynamic digital, date/time and string displays.

Note: To indicate the connection between the selected line in the list box, and the corresponding graphical object, there is an arrow in the "Objects View" window (in the right hand side of the list box) from the left top corner of the window to the middle of the object.

Tags

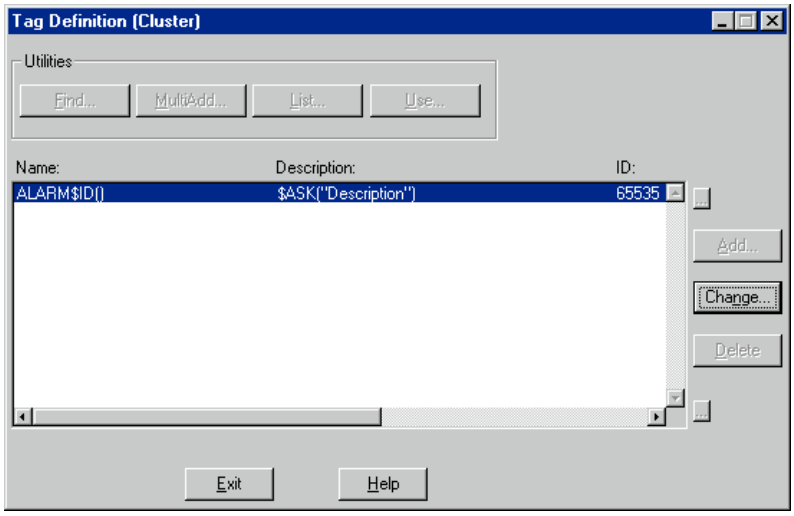
In the *Define Cluster* dialog, activate the **Tags** button to change the original definition of the tag, so that a new tag will be generated upon cluster instantiation in the Image.

After you activate this button, the *Tag Definition* dialog is displayed. In this dialog, only the tags that are associated with the cluster objects will appear in the tags list. Only the **Change** button is enabled.

To change the current definition of the tag and cause a new tag to be generated upon cluster instantiation, activate the **Change** button to invoke the *Tag Specification* dialog.

The fields in the *Tag Definition* and *Tag Specification* dialog are described in more detail in *Chapter 7, Tags*.

Note: You can also access this dialog by double-clicking on a line in the list.



Special Tokens

In the *Tag Definition* dialog, you can use special tokens to enable customized tag creation and identification upon object instantiation. These tokens can be used in the **Tag Name**, **Address**, and **Description** fields to enable customized tag attribute generation.

'[..]' brackets specify an optional parameter.

The following tokens can be used:

$ID([from-to])

The from-to variable represents characters from the data supplied by the operator upon instantiation. The following methods can be used for the From-To parameter:

#-# All the characters within the number range you specify will be displayed. For example, if the string is ABCDE and you specify 2-4 for From-To, the letters BCD will be displayed.

The character located at the number you specify will be displayed. For example, if the string is ABCDE, and you specify 3 for From-To, the letter **C** will be displayed.

#- All the characters from the number you specify and forward will be displayed. For example, if the string is ABCDE, and you specify 3- for From-To, the letters CDE will be displayed.

-# All the characters up to the number you specify will be displayed. For example, if the string is ABCDE and you specify -3 for From-To, the letters ABC will be displayed.

For example, If you specify the tag name ANA$ID(2-3) in the *Tag Definition* dialog and if the operator instantiates the object for which this tag was defined and enters the instance name I02, a tag called ANA02 will be created for that object (the count for 2-3 in I02, is I=1, 0=2, and 2=3).

For tag address, if, for example, you want the address constant to be 0000, in the **Address** field in the *Tag Definition* dialog, you can choose 0000$ID(2-3). Then if, for example, the operator enters A10 in the instance name, the address of the tag generated upon instantiation of the object would be 000010.

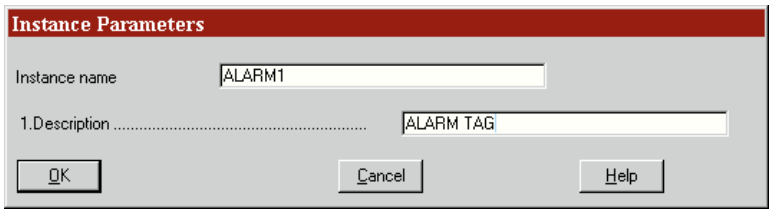
The same applies for description. For example, if you want the constant Valve to appear in the description followed by the valve number, you could use Valve$ID() (where the empty parentheses indicate that all the characters in the operator-supplied name should be used). If the operator enters 12 for the instance name while instantiating the object, the description of the generated tag will be Valve12.

Different combinations of the $ID variable can be used to customize generated tag attributes upon object instantiation.

`$ASK("text"[, from-to])`

For text, specify the text that will appear in the prompt upon instantiation. The from-to parameter is optional and can be used in the same way as described in $ID token.

For example, if you entered $ASK("TAG NAME") in the **Tag Name** field of the *Tag Specifications* dialog and $ASK ("Enter Description") in the **Description** field, when you instantiate the object in the Image, the *Instance Parameters* dialog appears:



If you enter $ASK("Tag Name",1-4) in the **Tag Name** field of the *Tag Specifications* dialog and $ASK("Enter Description",1-5) in the **Description** field, when you instantiate the object in the Image, the *Instance Parameters* dialog reappears. However, only the first four characters of the tag name and the first five characters of the tag description specified by the operator are extracted and used.

Alarms Activate this button to change the original definition of the alarms associated with the Alarm object in the cluster, so that a new alarm will be generated upon cluster instantiation in the Image.
Not applicable on the Web.

After you activate this button, the *Alarm Definition* dialog is displayed. In this dialog, only the **Change** button will be enabled.

To change the current definition of the alarm and cause a new alarm to be generated upon cluster instantiation. Activate the **Change** button to invoke the *Alarm Specification* dialog.

The fields in the *Alarm Definition* and *Alarm Specification* dialog are described in *Chapter 8, Alarms*.

Special Tokens

In the *Alarm Specification* dialog, you can use the $ID and $ASK tokens to enable easy alarm creation and identification.

The special tokens can be used in the **Tag Name**, **Family**, **Help File**, and **Text** fields in the dialog.

A detailed explanation of these special tokens is provided above in the description of the **Tags** button.

Find Activate this button to search for an existing tag or alarm family in the list. After you activate this button, the *Find* dialog is displayed:

	Specify the name prefix of the tag or alarm family that you want to search, and activate the **Find** button.
Define each Object when Instantiating	Select to change the definitions of the tags and alarms upon cluster instantiation in the Image.

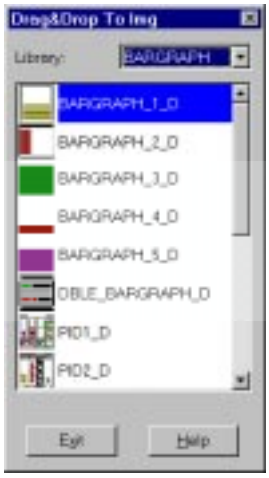
Placing Existing Clusters

➤ **To instantiate a cluster from a library to the application:**

Select **Open Lib** from the *Clusters* menu in the Image window.

Or,

Select the tool from the **Operations** toolbox. The *Drag &Drop To Img* dialog is displayed:



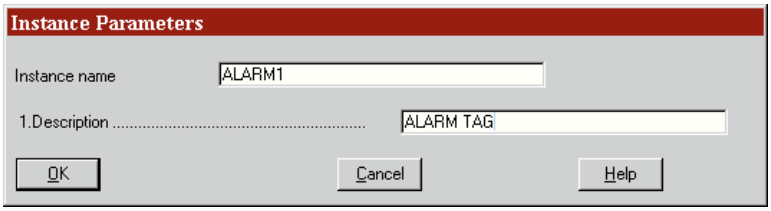
Note: This window is modeless (meaning that you can perform other Wizcon or operating system functions while this window appears on the screen). In addition, the library window can be resized to adjust its height.

In this window, specify the library from which you want to instantiate a cluster. For a list of existing libraries, click on the arrow to the right of the **Library** field.

After you select the library, the clusters that exist in that library appear in the listbox. To obtain information about any specific cluster, double-click on the cluster. An information box appears with the library to which the cluster belongs, the cluster's name, a brief description of the cluster, who defined the cluster, and when it was defined.

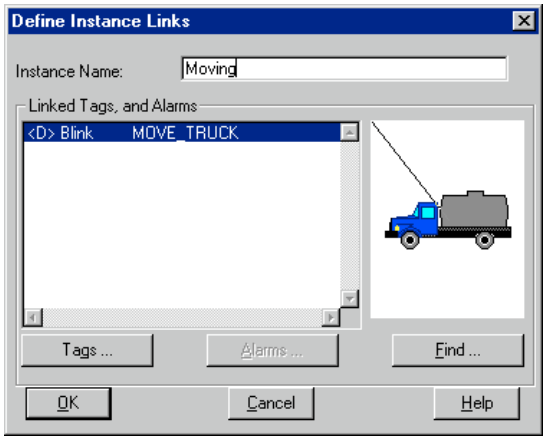
After you specify the library, select the cluster that you want to use and instantiate it in the Image by clicking the right mouse button on the object and dragging it to the desired location in the Image.

After you place the cluster in the Image, you need to enter some parameters that will be used to generate the instance "personality". If the cluster is not defined with the **Define each Object when Instantiating** option, the *Instance Parameters* dialog is displayed:



This dialog enables you to specify a unique name for the cluster instance in the Image. In addition, if the cluster contains $ASK variables (user-defined data), the dialog box will include the $ASK Parameter field for you to specify the user data. For each "*text*" from the $ASK token in the cluster, the *Instance Parameters* window will include one more line for that "*text*". If more then 10 different "*text*" are specified, then a scroll-bar will be added to enable scrolling through them.

If the cluster is defined with the **Define each Object when Instantiating** option, the *Define Instance Links* dialog is displayed:



The following options are available:

Instance Name — The unique name of the instance in the Image.

Linked Tags and Alarms — This listbox contains a list of all the tags and alarms associated with the object(s) in the cluster, and the operation defined for each.

Tags/Alarms — Activate these buttons to change the original definitions of the tags and alarms associated with the objects in the cluster. The tag and alarm definitions that you specify will be used to generate new tags and alarms for the cluster in the Image.

The dialogs that appear when you activate these buttons are identical to those that appear for the same functions in the *Define Cluster Object* dialog described on page 12-55.

Find	Activate this button to search for a tag or alarm in the Linked Tags and Alarms listbox. In the entry field, you can specify the full name of the tag or alarm, or a name prefix. The dialog box that appears when you activate this button is identical to the one that appears for the same function in the *Define Cluster Object* dialog described on page 12-55.

Deleting a Cluster from the Library

Clusters can be deleted from their library.

➤ **To delete a cluster from the library:**

1. Select the **Cluster and the Open Lib** menu.
2. In the **Library** field (combo box field), select the library from which you want to delete the object. Then, select the cluster from the clusters' list in the dialog and press the <Del> button on the keyboard.

Note: Since a library must contain at least one cluster, you can not delete the last cluster in the library.

Copying Clusters from One Library to Another

Clusters can be copied from one library to another.

➤ **To copy a cluster from one library to another:**

1. Select the **Cluster and the Open Lib** menu.
2. In the **Library** field (combo box field), select the library from which you want to copy cluster. Then select this menu item again (you can do it since the *Open Lib* dialog is modeless).
3. In the new dialog, select the library to which you want to copy the cluster.
4. Then simply drag the cluster from the source library dialog to the target library dialog, and the cluster will be copied.

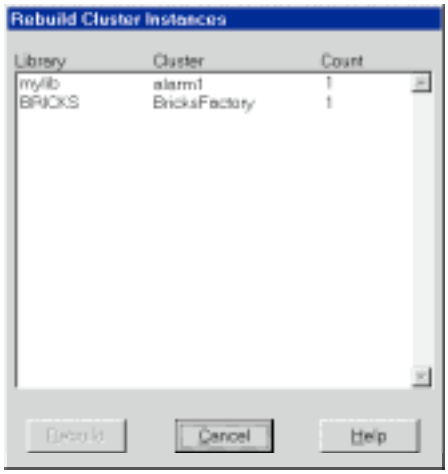
Note: Clusters that reside in the same library must have different names. Therefore, if the cluster you want to copy already exists in the target library, you will not be able to copy it.

Clusters Inheritance - Rebuilding Cluster Instances

One of the big advantages of using clusters is the ability to rebuild all instances automatically after updating the original cluster in the library. For example suppose you have a cluster in the library of a specific valve type, and you already used this cluster many times in your application. Thus you have many instances of that cluster in your application. Now you want to change the graphic representation of the valve, for example. What you have to do is simply redefine the object once in the library, and then use the **Rebuild** option in the Image *Clusters* menu.

➤ **To rebuild the instances in the application:**

1. Select **Rebuild Instances** from the *Clusters* menu in the Image window. The *Rebuild Cluster Instances* dialog is displayed:



   In the list, you can see all the instances that were placed in the current Image. Each line contains the library name, the cluster name, and how many instances of that object were placed.

2. Select those items you want to update (note that the list box has multiple selections, and therefore, you can select more than one line in the list), and press the **Rebuild** button.

Note:

- *The tags and alarms that were associated with each instance will be kept the same.*
- *The Rebuild operation will fail if there is no compatibility between the cluster in the library, and the instances in the Image. Compatibility means that the tags, alarms, triggers must have the same links. For example you cannot redefine an object that was linked to one tag to be connected to two tags.*
- *You can select all items in the list by pressing <CTRL></> keys*

Working with the Wizcon Basket

The basket is a special tool that supplies a new (high) level of engineering and application design. It is used to make a prototype of the application before starting to actually implement it, and also to trace the progress of the application development.

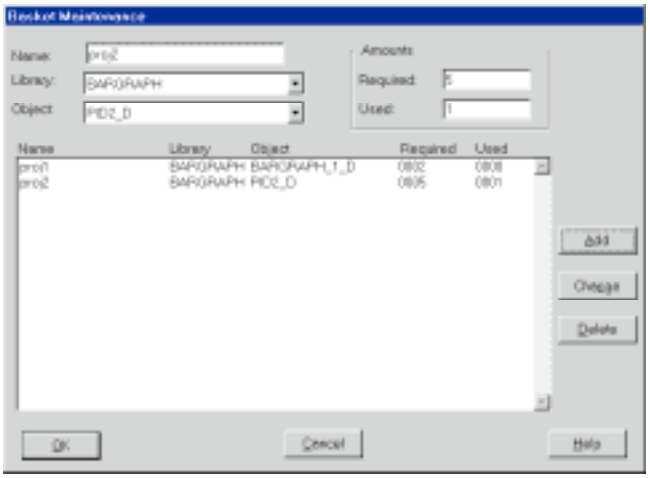
You can think of baskets as shopping lists. Just as you specify in the shopping list the groceries you need to buy, you can specify in the basket the components you need to include in your application, such as five pumps, 12 valves and two reactors.

When you place an object from the basket to your application, there is one less object that you can take from the basket. If you delete an instance that is a basket item from the application, it will be added to the basket again (as if not taken from there). All the basket operations are also logged in a file called BASKET.LOG, which describes who takes or adds items from and to the application basket, and when.

There is only one basket in the system, which is kept in a simple ASCII text file called BASKET.DAT. This file can be edited using any text editor to ensure simple and fast Image design for Wizcon application engineers. The format of the BASKET.DAT file is similar to the one that appears in the listbox of the *Basket Maintenance* dialog described on the following page.

➤ **To define the application basket:**

Select **Basket Maintenance** from the *Clusters* menu in the Image window. The *Basket Maintenance* dialog is displayed:



The following fields are available:

Name — Specifies the name of the item as you want it to appear in the basket library.

Library — Specifies the library from which you want to extract the cluster. To select from a list of existing libraries, click on the arrow to the right of the field.

Object — Specifies the name of the cluster as it appears in the library you specify. To select from a list of existing objects, click on the arrow to the right of the field.

Amounts — For **Required**, specify the amount of times the cluster object will be available in the basket library. For **Used**, the value is usually 0 (if you do not fill this field, the default value is also 0). This indicates that the first cluster object in the basket library will be number 0.

Cluster Listbox	A list of existing clusters defined in the basket library.
Add	Activate this button to add the current cluster definition to the basket library.
Change	Activate this button to change the definition of a cluster in the basket library to the current definition.
Delete	Activate this button to delete the cluster from the basket library.

Instantiating Basket Objects

You can instantiate an existing cluster object from a basket library to the application:

➤ **To instantiate an existing cluster:**

Select **Open Basket** from the *Clusters* menu. The *Drag &Drop to Img* dialog is displayed:

➤ **To instantiate an object from the library window:**

Click on the right mouse button on the object you want to instantiate, and drag the object to the desired location in the Image.

Note: In addition to each object in the library, the numbers indicate the amount of required objects that you specify in the Basket Maintenance dialog, and the amount of objects you already instantiated in the Image.

Instance Operations

Once clusters are instantiated in an Image, they can be moved, scaled, rotated, and deleted the same as any other Image object. For more detail about these operations, refer to the *Image Editing* section on page 12-32.

Cluster definitions can be canceled by selecting a cluster object in the Image, and then selecting **Break** from the *Clusters* menu in the Image.

Instances can not be defined as dynamic, as trigger, or as another cluster (no nesting of clusters), unless they are broken apart.

A *grid* is an array of points superimposed on an Image. It is used to accurately position objects in an Image.

A grid consists of the following elements:

Origin The origin is the reference point that all other points are made relative to. The origin can be any point in an Image.

Step The distance between adjacent grid points. Different values can be assigned for horizontal and vertical steps.

Snapping The cursor can be made to move only in grid point steps. When the mouse is moved, the cursor will jump to the next grid point.

The following types of grids can be used:

World The grid step is set to the Drawing Space: When the zoom level is changed, the visible distance between grid points also changes accordingly together with the other geometrical objects in the Image.

Pixels The grid step is set to the screen pixels: Whatever the zoom level, the distance between the grid points remains the same, even though object sizes visibly change.

Grids can be made visible or hidden. The following sections describe the operations that are performed to create grids and set their attributes.

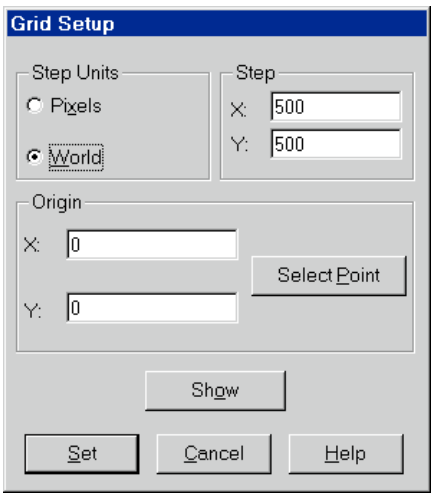
Grid Configuration

Menu ⇨ Modes ⇨ Grid Setup

Image Main Toolbar ⇨

➤ **To configure a grid:**

Select **Grid Setup** from the *Modes* menu, or the **Grid Setup** tool from the toolbar. The *Grid Setup* dialog is displayed:



The following options are available:

Step Units — Specifies the grid type, as follows:

Pixels are Image grid type units.

World are geometric grid type units.

Step — The grid step (in the respective units):

X is the horizontal step.

Y is the vertical step.

Origin	Used to enter the origin point X-Y coordinates.
Select Point	When this button is activated, the dialog will temporarily be suspended, and the operator can then indicate the origin point by clicking the left button in the window.
Show	When this button is activated, the grid is displayed on the Image to verify the setting. If the operator changes the setting and activates the button again, the old grid will be deleted and the new one will be displayed.

Grid Display

Operations Toolbar ⇨

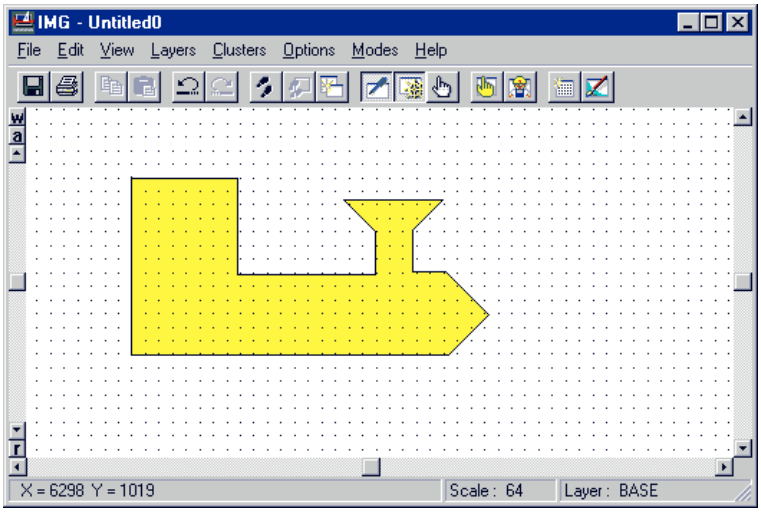
Menu ⇨ Modes ⇨ Grid Show

Grids can be visible or hidden

➤ **To make a grid visible or hidden:**

Click on the **Grid** tool from the **Operations** toolbox, or select **Grid Show** from the *Modes* menu. A grid is displayed over the Image.

For the following Image, the grid was activated:



Grid Snapping

Operations Toolbar ⇨

Menu ⇨ Modes ⇨Grid Snap

➤ **To toggle the Grid Snapping mode on and off:**

Click the tool in the **Operations** toolbox, or select **Grid Snap** from the *Modes* menu.

Image File Menu

The Image *File* menu provides the user with the basic operations of the Image.

The File menu consists of the following options:

Save Select this item to save the current Image file with its original name.

Save as Select this item to save the current Image file with a new name.

Insert The Insert file option allows you to insert an existing Image file, into an existing Image window.

Import You can import or load an Image file that has been saved as an ASCII file into the Image. This file can then be viewed and edited.

Attach to The File Attach to menu allows you to attach an Image (*.VIM) to an existing window. This replaces the Image inside the window. The VIM file is modified to reflect this change. The *Common Open* dialog lets you select the **Attach VIM** (actually the Image is what is attached). The Image title changes to, for example, attached to c:\APPLIC\W7\2.VIM.

Print Select this item to print the current view.

Exit Select this item to close the current window. If you made changes to the Image but did not save the file, you will be prompted to either save the changes or discard them.

Normally an Image window and Image are the same. The file name used for both are identical except for the extension. Image will automatically open/save both files as needed.

Save menu: Saves the Image. When saving the Image for the first time, the *Save As* dialog opens and asks you to give your Image a new name. Consequent saves are saves with the current name.

Save As: The user is asked for a name and can select the type of save: VIM, ASCII or Bitmap.

File Type and File Extension

Image	*.VIM
Bitmaps	*.BMP
ASCII	*.ILS

The following paragraphs describe the filing operations for Image files.

New Image Files

New Image files are opened from the Wizcon Application Studio.

➤ **To open a new Image file:**

From the *File* menu in the Wizcon Application Studio, point to **New** and select **Image**.

Or,

Press **Ctrl +N**.

Or,

In the Container List of the Wizcon Application Studio Containers List, right-click **Images** and select **New Image** from the popup menu. A new Image is displayed with the default Image properties.

Open Files

Studio Main Menu ⇨ File⇨Open ⇨ Image

Image files are opened from the Wizcon Application Studio.

➤ **To open an existing Image file:**

From the *File* menu of the Wizcon Application Studio, select **Open**. In the dialog that is displayed, select the file to be opened. Image files have the extension *.VIM.

Or,

Select the file you want from the List of Images in the Wizcon Application Studio. When a file has been selected and confirmed, the Image will be opened.

If an Image with an undefined tag is loaded, an error message will appear with a reference to a file called imgname.mis, where imgname will be the name of the Image that was loaded.

The .mis file can be opened for further information using any text editor. The file includes the name of the undefined tag and its type (dynamic or trigger).

Saving Files

Menu ⇨ File ⇨ Save or ⇨Save as

The *Save* menu saves the current Image and window setting (position, mode etc.)

When saving the Image for the first time, the *Save As* dialog with the extension of *.VIM opens in the default directory for the Image. It prompts you to give your Image a new name (*.VIM). Consequent saves are saved with the current name.

Select **Save As** to save the current Image file under a new file type: VIM, ASCII, or BITMAP. In the dialog that appears, enter the new name of the file to be saved.

➤ **To save an Image as a bitmap:**

Select **Save as Bitmap**. A dialog is displayed, enter the new name of the Image. For a bitmap file, the extension is .BMP.

➤ **To save an Image as an ASCII file:**

Select the **Save as** ASCII option. A dialog appears, enter the new name of the Image. For an ASCII file, the extension is .ILS.

The save operation will save the Image with all its attributes (size, location, which Image is in the window, etc.) and modifications that were made.

Deleting Files

Images are deleted from the Wizcon Application Studio.

➤ **To delete an Image file:**

Select the Image name from the List of Images in the Wizcon Application Studio. Right-click on the file you wish to delete and select **Delete** from the popup menu.

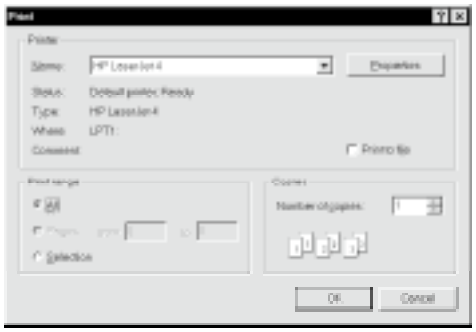
Printing Images

Menu ⇨ File ⇨ Print

Images are printed from the Image file menu.

➤ **To print an Image file:**

Select **Print** from the *File* menu. The *Print* dialog is displayed:



■ To send the Image to a file in the bitmap format:

Select the **Bitmap** option and specify the filename.

ASCII Files

Images that were saved as ASCII (*x*.ILS) files can be loaded the same as any other Image (for more information about the purpose and usage of Image ASCII files, see the sections below).

➤ **To load an ASCII file Image:**

Select **Import** from the *File* menu. A dialog will appear with all the ASCII files that you can import. Select the file you want to import and activate the **OK** button.

ASCII Files

By default (when you select **Save** or **Save as**) Images are saved in Wizcon .VIM files. You can, however, also save Images as ASCII files, which can then be edited and loaded in the Image window.

Image ASCII files can be useful for the following purposes:

- Viewing: Saving Images in ASCII format enables you to obtain documented records of the Images so that they can be viewed simply by opening the file with any text editor.
- In addition, this option provides the illustration designer and plant engineer with a powerful Image debugging tool.
- Drawing: The ASCII format enables Images to be converted easily from/to other formats, such as AUTOCAD and Wizcon for DOS.
- This option also enables you to draw Images by editing text files. This can be useful when you are working outside the Wizcon environment, or want to create an Image without physically drawing it.
- Other Uses: Images in ASCII format can be used for numerous purposes, to enhance Image creation and modification capabilities.

➤ **To save an Image as an ASCII file:**

Select **Save as ASCII** from the *File* menu. You will then be prompted to enter the name of the file. The Image will be saved in a file with the extension .ILS. For more information see *Appendix G, Wizcon ASCII (ILS) File Format* for the structure and format of an ILS file.

File Insert

File ⇨ Insert

Any Image can be merged with the current Image in a window.

➤ **To merge Images:**

Select **Insert** from the *File* menu. In the dialog that is displayed, select a name from the list.

When a name is entered and confirmed, the contents of that Image will be incorporated into the current Image and all the merged Image elements will automatically appear selected.

Note: Imported objects will be placed in the layer to which they belonged in the source Image (according to the ordinal number of the layer and not the layer name), or in the current layer if the layer to which they belonged does not exist in the target Image. The same applies for text in different fonts.

File Attachment

File ⇨ Attach to

The **Attach to** options enables you to attach an Image (*.VIM) to an existing window.

This replaces the Image inside the window. The VIM file is modified to reflects this change. *Common Open* dialog lets you select **the Attach VIM** (actually the Image is what is attached). The Image title changes to, for example, attached to c:\APPLIC\W7\2.VIM.

File Import

File ⇨ Import

The **Import** option enables you to import or load an Image file that has been saved as an ASCII file (*.ILS) into the Image window. This file can then be viewed and edited.

Chapter 13
Image Animation

About this chapter:

This chapter describes how to use Image animation in Wizcon for Windows and Internet, as follows:

Overview, on the following page, provides an overview of Image animation.

Dynamic Objects, page 13-3, provides a description of dynamic objects and describes how to define them.

Alarm Objects, page 13-31, describes how to define objects as alarm objects.

Trigger Objects, page 13-36, describe how to define trigger objects.

Input Method Preparations, page 13-40, describe what to do before you can use an input method.

Trigger Macros, page 13-55, describe how to define trigger macros.

Tag Value Sliders, page 13-58, describe how to design sliders.

Media Player, page 13-61, describes how to define media players.

Tag Value Simulation, page 13-63, describes how to simulate tag values in Images.

Overview

Image Animation is the process of linking Image objects created by using the Image Editor to a control process via tags. Refer to *Chapter 7, Tags*, for more information about tags and their relation to on-going processes,

There are two main ways to implement Image Animation:

Dynamic Objects Objects in Images are associated with tags. Any change in tag values causes the object to change graphically.

Trigger Objects Objects in Images are designated as *triggers*. Whenever these objects are activated, operations, such as tag value changes, are executed immediately, thereby affecting the graphic presentation of the Image.

Each of these methods is described in the following sections.

Dynamic Objects

Dynamic objects are elements that change according to tag values. When a tag value changes, the properties of the object, such as position, size, color, and orientation change accordingly (there are 12 different object properties). Thus, a dynamic graphical illustration of plant activity can be achieved.

Any object in an Image can be dynamically animated, including process messages. In addition, process messages themselves can be made to change (textually) according to tag values. Values can be presented numerically, or predefined messages can be displayed for each specific tag value.

In order to implement object animation, tag value ranges are denoted by start and end values. The current state of an object corresponds to the start value, and the final state of an object, after changes, corresponds to the end value. Thereafter, for any tag value, the object will be changed proportionally (by linear interpolation or extrapolation).

Tag values can be further divided into sub-values that control different display attributes, such as colors and fill patterns.

Dynamic Object Definition

Menu ⇨ Edit ⇨ Operations ⇨ Dynamic

Objects Toolbox ⇨

This operation is performed to make existing Image objects dynamic.

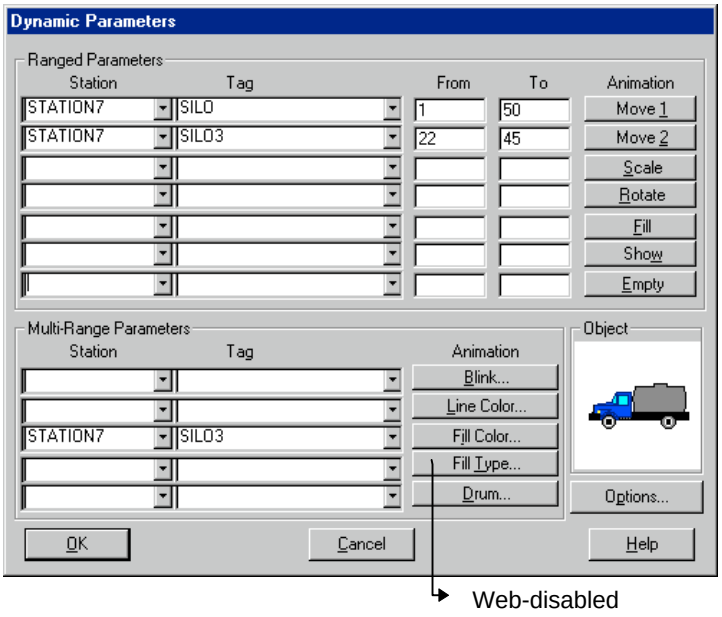
Note: It is recommended to refer to Step 4 of the Getting Started Guide for more details about creating dynamic objects.

➤ **To create a dynamic object:**

Select the graphic object in the Image that you wish to include in the cluster, and do one of the following:

- Click the **Dynamic Definition** tool in the **Object** toolbox.
- Right click an object and select the **Dynamic Definition** option from the popup menu.
- From the *Edit* menu, point to **Operation** and select **Dynamic**.

The *Dynamic Parameters* dialog is displayed:



The following options are available:

Ranged Parameters Includes the following fields:

Station: Specifies the station running the Wizcon application to which the tag belongs. To select a station from the list of stations defined in the Wizcon network, click on the arrow to the right.

Tag: Specifies the tag associated with the selected object. To select an existing tag, click on the arrow to the right.

From: Specifies the minimum tag value for which the animation will occur.

To: Specifies the maximum tag value for which the animation will occur.

Animation

Specifies the dynamic operation to be performed on the selected object for the specified tag value range. The operations include the following:

Move 1: Positional variation 1.

Move 2: Positional variation 2.

Scale: Scale variation.

Rotate: Orientation variation.

Fill: Command to fill an object.

Show: Specifies that an object will be visible when the value is within the specified value range, and hidden when the value is outside that range.

Empty: Specifies that an object will be empty when the value is within the specified value range.

Multi-Range Parameters

The following options are available:

Station: Specifies the station running the Wizcon application to which the tag belongs. To select a station from the list of stations defined in the Wizcon network, click on the arrow to the right.

Tag: Specifies the tag associated with the selected object. To select an existing tag, click on the small arrow to the right.

Animation

Specifies the dynamic operation to be performed on the selected object for the specified tag value range. The operations include the following:

Blink: Specifies that an object will blink when the value is within the specified value range.

Line Color: Sets the line color of an object when the value is within one of several specified value ranges.

Fill Color: Sets the fill color of an object when the value is within one of several specified value ranges.

Fill Type: Sets the internal fill pattern of an object when the value is within one of several specified value ranges. *Not applicable on the Web*.

Drum: Sets a bit pattern so that when a tag value matches this bit mask, the corresponding object will be visible; otherwise it will be hidden.

Object The selected object to which the dynamic definition will be applied.

Options Transformation options.

Important Notes:

- In the *Dynamic Parameters* dialog, a special arrowhead character will appear beside any button that has been selected.
- When the *Dynamic Parameters* dialog appears on the screen, no dynamic object animation will occur in the Image, although tag values will be updated. As soon as the dialog is closed (when the **OK** or **Cancel** button is activated), all dynamic objects in the Image will be graphically updated.
- Several transformation and range parameters can be set for one object, each dependent on its associated tag value. The final appearance of an object will be the result of all the relevant transformations. However, if any one transformation is applied more than once, only the last application will be effective.
- Dynamic objects cannot be nested or grouped.
- When defining dynamic object attributes in the *Dynamic Parameters* dialog, you can right-click to cancel the current operation.

Optimizing Dynamic Object Performance

The task of dynamic updating in the Image is one of the most important operations in the Image. Each time a dynamic object changes its state, such as in tag changes or blink times, Wizcon Image redraws the object. When you have a dynamic object that changes very fast, such as a blink with a fast rate, the Image can not avoid many repaints. This process is complex and uses a large amount of computer resources. It should be optimized so that it will run as fast as possible.

To optimize your dynamic object performance, consider the following guidelines when designing your Image:

- Avoid putting too many fast changing dynamic elements in one zone.
- Minimize the size of fast changing dynamic objects.
- Avoid spreading fast changing dynamic elements out over the zone.
- Avoid putting other dynamic objects in the immediate surroundings of fast changing dynamics.
- Keep fast changing dynamic objects as simple as possible. Do not make a fast blink over a complex cluster or group.

Each of the dynamic object attributes is described in the following sections.

Motion

When the **Move 1** button is activated, the *Dynamic Parameters* dialog is temporarily disabled and the Editor enters the **Move** mode (described in *Chapter 12, Image Editor*). When an object is moved to the location corresponding to the End Value parameter, the dialog reappears for further setting.

If the **Hand** mode (described in the *Transformation Options* section on page 13-20) is active, instead of moving the object, the operator enters the movement coordinates in the *Move 1* dialog:

The following options are available:

X Factor Specifies a horizontal change in drawing units (with a scale of 64, each unit being 1/100 mm), per unit change in the tag value.

Y Factor Specifies a vertical change in drawing units (with a scale of 64, each unit being 1/100 mm), per unit change in the tag value.

A special animation feature enables the movement to reflect the combined value of two tags. To implement this feature, specify a new tag name or use the current tag name in the *Dynamic Parameters* dialog, activate the *Move 2* button, and specify the coordinates for the second tag in the *Move 2* dialog that appears.

The final position of an object is derived from the sum of the coordinates of each individual position. For example, diagonal movement can be obtained through the combination of one tag with a horizontal position parameter, and another tag with a vertical position parameter.

When the **Rotate** button is activated, the *Dynamic Parameters* dialog is temporarily disabled and the Editor enters the **Rotate** mode (described in *Chapter 12*, *Image Editor*). When the object is rotated to the orientation corresponding to the End Value parameter, the dialog reappears for further setting.

Note: If the start point is identical to the end point, clicking on a rotation point will rotate the object 360 degrees.

If the **Hand** mode (described in the *Transformation Options* section on page 13-19) is active, instead of rotating the object, the operator enters the rotation parameters in the *Rotate* dialog:

The following options are available:

Angle — Specifies the rotation angle in degrees, per unit change in the tag value.

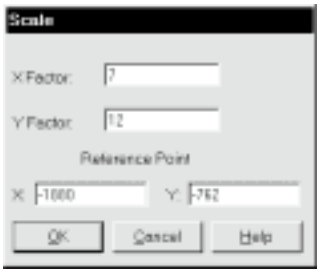
Reference Point — Specifies the X and Y coordinates of the rotation axis. The default coordinates are those of the lower left corner of the bounded segment rectangle.

The rotation axis can be made to relate to the Image or the object itself, by specifying the desired parameter in the *Options* dialog (which is invoked by activating the **Options** button in the *Dynamic Parameters* dialog).

*Note: Rotation from the **Start** orientation to the **End** orientation will be in the counter-clockwise direction, unless otherwise specified in the* Options *dialog.*

When the **Scale** button is activated, the *Dynamic Parameters* dialog is temporarily disabled and the Editor enters the **Scale** mode (described in *Chapter 12, Image Editor*). When an object is scaled to the size corresponding to the **End Value** parameter, the dialog reappears for further setting.

If the **Hand** mode (described in the *Transformation Options* section on page 13-20) is active, instead of sizing the object, the operator enters the scaling parameters in the *Scale* dialog:



The following options are available:

X Factor — Specifies the horizontal scaling in drawing units, per unit change in the tag value.

Y Factor — Specifies the vertical scaling in drawing units, per unit change in the tag value.

Reference Point — Specifies the X and Y coordinates. The default coordinates are those of the lower left corner of the rectangle bounding object.

The scaling reference point can be made to relate to the Image or the object itself, by specifying the desired parameter in the *Options* dialog (which is invoked by activating the **Options** button in the *Dynamic Parameters* dialog).

Fill Region

Like other object elements, the fill region of an object can vary according to the tag value, and is set according to the **Start** and **End** values.

When the **Fill** button is activated, the *Dynamic Parameters* dialog will be moved temporarily to the background and a half-filled box icon will be attached to the cursor. Click the left button and drag the mouse to the **Start Value** area. Click the left button again to fill the **End Value** area. Click the right button to abort the operation. When the **Fill** operation is complete, the *Dynamic Parameters* dialog will return to the foreground for further specifications.

The filling reference point can be made to relate to the Image or the object itself by specifying the desired parameter in the *Options* dialog.

Show/Empty

The **Show** and **Empty** attributes can be applied globally for an entire tag range, as follows:

Empty Object — When the **Empty** button is activated, the object will be empty for the given value range, and filled when outside that range (if the object is defined as a filled object).

Show Object — When the **Show** button is activated, the object will be visible for the given value range, and hidden when outside that range.

For each global setting, if you use a range in which the first value is greater than the second, the opposite effect will occur (the object will be hidden) for the range specified.

For example, if you use the range 10-4.9 for each of the settings, the following will occur:

- The object will be filled for any value from 5 to 10.
- The object will be hidden for any value from 5 to 10.

Note You can select Force Dynamic Show from the Options *menu in the Image window to cause a dynamic object in an Image to always appear, even if that object is currently hidden in accordance with a Show Object specification.*

Or, you can click on the **Force Dynamic Show** icon in the Image toolbar.

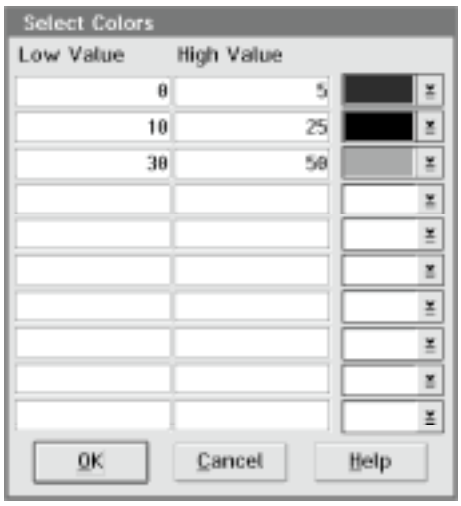
In addition, note that the lower value must be a value within the range of show values, for the hidden option to operate (such as 10-4.9 described above).

Fill Colors and Types

Some attributes that can be applied to dynamic objects are divided into several tag value ranges. These attributes include **Blink**, **Line Color**, **Fill Color**, **Fill Type** and **Drum**. Each of these attributes is described in the following paragraphs.

Dynamic colors and patterns can be applied to objects by activating the **Line Color**, **Fill Color** or **Fill Type** button.

If you activate the **Line** or **Fill Color** button, the following dialog is displayed:

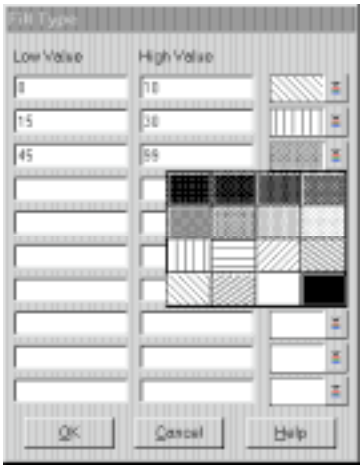


In the **Low Value** and **High Value** entry boxes, specify the value range for which the color you select will be active. Then, select a color for the range you specified, by clicking on the arrow to the right of the color field. You can move from field to field by pressing the <Tab> key.

Note: Each range should be specified in ascending order. No overlapping is allowed.

For values that are not included in the ranges you specified, the object will maintain its original attributes.

If you activate the **Fill Type** button, the following dialog is displayed:



The procedure for specifying values and selecting fill types in this dialog is the same as that for the *Select Colors* dialog described on the previous page.

➤ **To define a dynamic object to blink:**

Activate the **Blink** button in the *Dynamic Parameters* dialog. The following dialog is displayed:

The following fields are available:

Low Value — Specifies the minimum tag value for which the dynamic object will blink.

High Value — Specifies the maximum tag value for which the dynamic object will blink.

Rate — Specifies the amount of time that the dynamic object will appear on the screen, then disappear, then reappear, and so on. The value for **Rate** can be **Fast**, **Medium** or **Slow**. To select a rate, click on the arrow to the right of the field, or move to the field and use the up and down arrow keys to select an option.

In the Tuning Parameters utility and in the WIZTUNE.DAT file (both described in Appendix C, Tuning Parameters,), the

IMG_BLINKRATES parameter defines the blinking rate values for dynamic objects. The format of this parameter is:

IMG_BLINKRATES=fast medium slow

The values you specify for **fast**, **medium**, and **slow** are in milliseconds, and can be from 100 (1/10 second) to 30,000 (30 seconds). If you specify a value that exceeds these limits, Wizcon will automatically apply the maximum or minimum values instead.

The default is IMG_BLINKRATES=500 1000 2000.

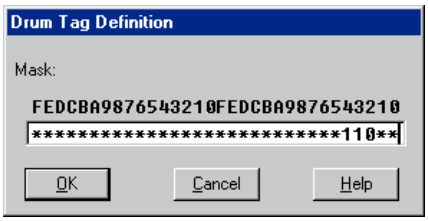
Note: You can also use commas (,) to separate the values.

Drum Pattern

An object can be made visible when its associated tag value matches a specified bit pattern. The bit pattern can include Don't Care bits, which are bits that will be considered matches no matter what their actual values may be.

➤ **To assign a Drum Pattern:**

Activate the **Drum** button. The *Drum Tag Definition* dialog is displayed:



A bit pattern is entered as a sequence of zeroes, ones, or asterisks (*) that represent Don't Care bits.

For example, using the pattern in the dialog box above, the value 0101101100011010001101110**110**10 matches the pattern, while the value 0101101100011010001101110**101**10 does not.

If a tag value matches the specified bit pattern, the object will be made visible; otherwise it will be hidden.

If several objects are associated with the same tag, each object requires its own pattern, so that each pattern will control the visibility of a different object.

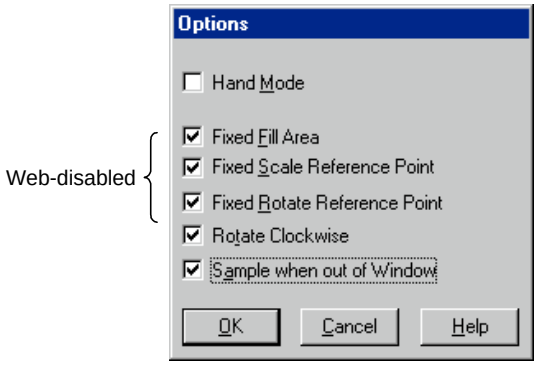
This tool can be used to capture several discrete states within a single analog tag. For example, a device can at any time be in the On, Off, Idle or Fail state, whereby each state is represented by a different bit in an analog tag. A bit pattern can be defined for each object that represents a state, and as the device changes states, its current state will be reflected in the Image by the respective object.

If a tag value matches several patterns (due to the Don't Care bits), any object associated with those patterns will be made visible.

Note: You can select Force Dynamic Show from the Options menu in the Image window to cause a dynamic object in an Image to appear always, even if that object is currently hidden according to a Drum Pattern specification.

➤ **To perform dynamic object transformation operations:**

Activate the **Options** button. The *Options* dialog appears:



The following options are available:

Hand Mode — When this option is selected, the operator will be able to enter numerical values for the Move, Scale, default, they are defined graphically in the Image.

Fixed Fill Area — When this option is selected, fill area borders will be fixed to their position in the Image. By default, the borders are bound to the object. *Not applicable on the Web.*

Fixed Scale Reference Point — When this option is selected, the Web-disabled position in the Image. By default, the point is bound to the object. *Not applicable on the Web.*

Fixed Rotate Reference Point	When this option is selected, the rotation axis is fixed to its position in the Image. By default, the axis is bound to the object. *Not applicable on the Web.*
Rotate Clockwise	When this option is selected, the rotation will be performed in the clockwise direction. By default, the direction is counter-clockwise.
Sample when out of window	When this option is selected, transformed dynamic objects that no longer appear in the Image window will still be sampled. This option is described on the next page.

If multiple transformations are to be performed on the same object, they will be performed in the following order: Move, Scale and Rotate. This order affects the location of fill area borders, rotation axes, and scaling reference points when they are not fixed to a position in the Image.

Sample when out of Window

In Wizcon , dynamic objects that do not visually appear in the Image window are not sampled. However, if an object was transformed using the dynamic move, resize, or rotate options, and after the transformation that object receives tag values that cause it to move outside the Image window, you can use the **Sample when out of Window** option to cause the object to be sampled.

If this option is not selected, transformed objects that no longer appear in the Image window will not be sampled.

Dynamic Text

Drawings Toolbox ⇨

Edit ⇨ Drawings ⇨ Text

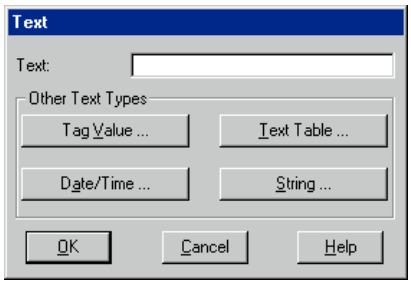
In any Image, tag values can be displayed as one of the following dynamic text object types:

- Tag value
- Text Table display (each value causes a pre-defined string to be displayed)
- Date/Time display
- Tag string display (exact field device values)

Note: You may want to refer to Step 6 of the Getting Started Guide to see an example of defining dynamic text.

➤ **To define a dynamic text display:**

Click on the tool in the **Drawings** toolbox. The *Text* dialog appears:



To enter regular text, click the left button in the **Text** field. Regular text is described in more detail in *Chapter 12, Image Editor*. The following description refers to dynamic text only.

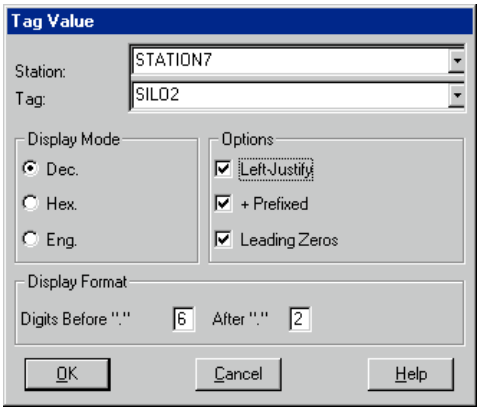
The fields that relate to dynamic text in the dialog are as follows:

Text	This field is used only for regular (non-dynamic) text in the Image. Regular text is described in *Chapter 12, Image Editor*.
Tag Value	For numerical display.
Text Table	For the display of text, according to predefined tag values.
Date/Time	For date or time display.
String	For actual field device value display.

Each of the dynamic text object types are described in the following paragraphs.

➤ **To define numerical display for tag values:**

Activate the **Tag value** button. The *Tag Value* dialog is displayed:



The tag and its value to be displayed are both defined together with the display attributes.

The fields in this box are:

Station	Specifies the Wizcon station to which the tag belongs.
Tag	Specifies the tag associated with the tag value.
Display Mode	Select **Dec** for Decimal, **Hex** for Hexadecimal, or **Eng** for Engineering (powers of ten). For example, for the number fifteen: Dec = 15, Hex = F, and Eng = 1.5e1.
Options	In this field, select **Left Justify** to cause the digits in the text field to be justified to the left.

Select **+ Prefixed** to cause positive values to be preceded by a plus (+) sign. By default, no sign precedes positive values.

Select **Leading Zeros** to cause zeros to appear to the left of the value. By default, empty spaces appear to the left.

Display Format In this field, for **Digits before "."**, specify the number of digits that will be allowed for the integer part of the value.

For **Digits after "."**, specify the number of digits that will be allowed for the fractional part of the value.

Note:

- The tag value can also be defined as a dynamic object, as mentioned above. Thus, both the display contents and appearance can be made to change in accordance with tag value changes.
- The **Digits before "."** and **Digits after "."** fields may cause actual tag values to appear incorrectly. For example, if you specified 2 for the **Digits before "."** field, and the actual tag value is 115, only 15 will be displayed.
- To prevent confusion with decimal numbers, Wizcon automatically precedes hexadecimal numbers with ***0x***. Therefore, please take into account that you need space for *two* extra characters before the displayed value. For example: 65,355 in decimal = FFFF in hexadecimal. To indicate that FFFF is in hexadecimal, you must define six characters, *0xFFFF*.

Text Table

Text Tables are used to associate tag values with pre-defined strings. Whenever a Text Table is defined and activated, a text string will be associated with the tag values that were defined in the Table. When a

value changes, the corresponding string will be displayed. For example, a Text Table may state that whenever the tag value is 10, the string "This tag has ceased to function!" will appear in the designated location in the Image.

Each string table is stored in a separate file.

➤ **To assign text tables or create new ones:**

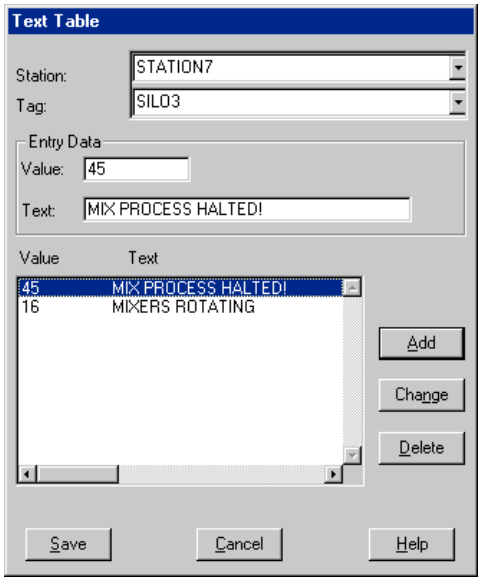
Activate the **Text Table** button in the *Text* dialog.

If no text table exists, the *New Text Table File* dialog will appear for you to specify the name of the text table that you want to define.

If a text table file already exists, the *Open Text table file* dialog appears:

Select a file from the list, or activate the **New** button to invoke a dialog in which you can enter the name of a new text table file.

After you specify the file you want to edit, the *Text Table* dialog is displayed to specify the string-value relationship:



The following options are available:

Station	Specifies the Wizcon network station to which the tag belongs.
Tag	Specifies the name of the tag.
Value	Specifies the string display value.
Text	Specifies the string for the value.
List	Specifies the list of values and the strings defined for them.
Add	Adds the value-string pair to the list.
Change	Replaces the selected pair with the one specified in the entry boxes.
Delete	Deletes the selected pair from the list.

Specify a tag name, the tag values, and their corresponding strings in the entry boxes, and add them to the list by activating the **Add** button. A value-string pair can be selected from the existing pairs list, placed in the entry boxes, and revised, by activating the **Change** button. When the **Delete** button is activated, the selected pair is removed from the list.

Special Cases:

- If a tag value does not exist in the text table, the text field will be filled with Xs (xxxxx).
- If no text table file exists, number signs (#####) will appear in the field.
- If a communication error occurred, asterisks (*****) will appear in the field.

If spaces are to be used in the string, enclose the string in quotation marks, for example, " The text ".

Text table string files can be created or modified using your system editor. The format of this file is as follows:

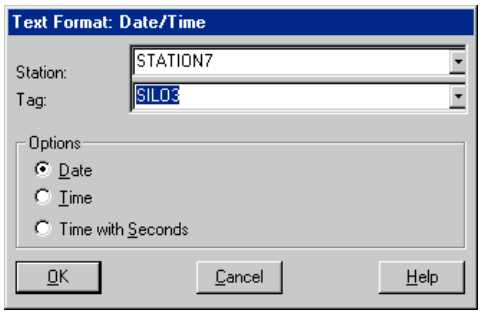
Value	String
5	"Cycle Starting ..."
20	"Cycle Completed !"
.	.

Note: Text Tables can also be used for Trigger objects when the String input method is active. Refer to the Trigger Objects section on page 13-36, for more details.

Date/Time display is used to present the value of a tag as a dynamic date or time display.

➤ **To define Date or Time display for tag values:**

Activate the **Date/Time** button in the *Text* dialog. The *Text Format: Date/Time* dialog is displayed:



The following options are available:

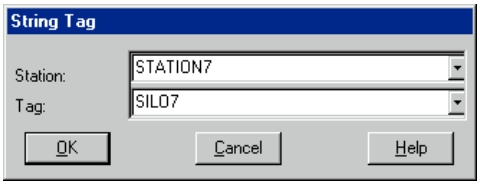
Station	Specifies the Wizcon network station to which the tag belongs.
Tag	Specifies the tag with which the Date/Time display will be associated.
Date	The tag value will determine the display of the number of days since 1/1/1980. The limitation date is up to the value of 21203 (18-Jan-2038) (18-01-38 on the Image).
Time	The tag value will determine the display of the number of minutes since midnight.
Time with Seconds	The tag value will determine the display of the number of minutes and seconds since midnight.

Tag Value String

Tag value string displays can be used to represent tags defined as **string tags** (in the tag definition procedure described in *Chapter 7, Tags*), as Image objects. Tag string objects in the Image will display exact field device numeric, alphabetic, or alphanumeric values.

➤ **To define a tag string display:**

Activate the **String** button in the *Text* dialog. The *String Tag* dialog is displayed:



Specify the Wizcon network station to which the string tag belongs, and then the name of the string tag you want to be represented in the Image. To select a station or tag from a list of existing stations and tags, click on the arrow to the right of the field.

String tag objects in the Image can also be defined as triggers. When the object is selected in the **Trigger** mode, you will be able to enter textual values using different input methods. For more detail about string tag trigger definition, see the *Trigger Objects* section on page 13-36.

Objects Toolbox ⇨

Image ⇨ Edit ⇨Operations ⇨ Alarm

An Image object can be associated with an alarm, so that the alarm will affect the way the object behaves. Such objects are called *alarm objects*.

An alarm object can be defined to blink, show, hide, or change colors when the alarm is active, provide textual assistance when selected, and enable alarm acknowledgment.

➤ **To define an object as an alarm object:**

Select an object in the Image and activate the **Alarms object** button in the toolbox. The *Alarm Object Definition* dialog is displayed:

The following options are available:

Station

The Wizcon network station to which the alarm belongs. For a list of defined stations that you can select from, click on the arrow to the right of the field.

Alarm Family

The family of alarms to be associated with the object. The name you specify must be the name of a family of alarms that was, or will be, defined in the system. (You can specify the name of an alarm family that was not yet defined in the **Alarm Definition** module. Although, at some point, it must be defined.)

For a list of defined alarm families that you can select from, click on the arrow to the right of the field.

Note: The maximum number of names that you can specify is 600.

Show Object When

Select **Always** to cause the object to appear in the Image constantly. If you select this option, you must also select an **Animation**, as described on the following page, or **Trigger Function** option, described on page 13-34.

Select **Alarm Family Active** to cause the object to appear in the Image only when the alarm condition is true.

Select **No Alarm** to cause the object to appear in the Image only when the alarm condition is false. If you select this option, both the **Animation** and **Trigger Function** fields will be disabled.

Animation

The following options are available:

Blink: Activate to define the blink parameters for the object. The *Image Alarm - Blink* dialog is displayed:

Fill Color: Activate to define the color display of the object. The *Image Alarm - Color* dialog is displayed:

Select the alarm status option you want and the color to be associated with that status. Active alarms can be either **Started** (unacked, unended), **Acked** (and unended), or **Ended** (but unacked).

For example, you can define the object to be red when the alarm is started, green when it is acked, and its default color when it is ended (the options for this example are shown in the dialog above).

Line Color: Activate to define the color of the border lines of the object. The *Image Alarm - Color* dialog is displayed, as shown above.

Note that:

- More than one animation option can be applied for each alarm object.
- If the **No Alarm** option is selected in **the Show Object When** field, the **Animation** field will be disabled.
- A selected **Animation** option is indicated by a small arrow that appears beside the button label.
- If more than one alarm is active in an alarm family, the status of the alarm in order of severity will be as follows:
- **Started**, **Ended**, **Acked**. In the **Trigger** mode, if the **Acknowledge** option is selected in the **Trigger Function** field, and you click on the object to acknowledge the alarm, all the alarm instances will be acknowledged.
- The Alarm Collapse mechanism is described in the *WizPro* section of *Chapter 5, Getting to Know the Application Studio*.

Trigger Function

Select **Acknowledge** to cause the alarm associated with the object to be acknowledged whenever the object is selected in the **Trigger** mode (described in *Chapter 12, Image Editor*).

Select **Acknowledge with confirm** to prompt the operator before acknowledging the alarm.

Select **Assist** to cause the help file of the alarm associated with the object to appear whenever you select the object in the Image.

Select **Assist + Ack button** to cause the help file of the alarm to appear with an additional acknowledge button.

For more information about alarm help files, see *Chapter 9, Events Summaries*.

Select **None** for no trigger function.

If the **No Alarm** option is selected in the **Show Object When** field, the **Trigger Function** field will be disabled.

Additional Information

- If an object was already defined as an alarm object, and you invoke the *Alarm Object* dialog for that object, the dialog box will appear with the options you selected. If you change the definition (select different options) and then activate the **OK** button, the new definition will replace the previous definition.
- Several objects can be selected together in the Image for alarm object definition. If an object within the group you selected was already defined as an alarm object, the group definition will replace the single object's definition.

Trigger objects are objects that you can click on to cause predefined tag values to be set automatically or manually, cause the Image to go to a predefined zone, or cause predefined macros to be activated.

Any trigger object included in a segment will function the same as when it is not included in a segment. For more information about segments, see *Chapter 12, Image Editor*.

Several tag input methods can be used for trigger objects. Each method is explained below. To test an input method, tag value variations can be simulated. Tag Value Simulation is described on page 13-63.

The tag value input methods include the following:

Action When the operator clicks on an object, a preset value is applied to the tag, or a predefined macro is activated. This method is valid for all tags and objects.

Buttons When the operator clicks on an object, a set of buttons with preset values appears. Activating a button causes a value to be applied to the tag, or a predefined macro to be activated. This method is valid for all analog and digital tags (not for string tags).

Bit When the operator clicks on an object, **ON**, **OFF**, and **Toggle** buttons appear. This method is valid for all tags and objects (except string tags, described in the section called **Tag Value String** on page 13-30). For analog tags, the **Toggle** buttons will not appear.

Data Entry When the operator clicks on an object, a dialog appears to specify a numerical tag value. This method is valid for all tags and objects, except Text Table objects described on the following page.

String	When the operator clicks on an object, a Text Table that was made active for the tag associated with that object, will be applied. The Text Table contains a list of strings corresponding to different tag values.
Date	When the operator clicks on an object defined as a Date/Time object, a dialog appears with the current date value to be modified.
Time	When the operator clicks on an object defined as a Date/Time object, a dialog appears with the current time value to be modified.
Smooth	When the operator clicks on an object, a dialog box appears with tag values that can be selected using sliders. This method is valid for all analog and digital tags (not for string tags).

Trigger Object Definition

Objects Toolbox ⇨

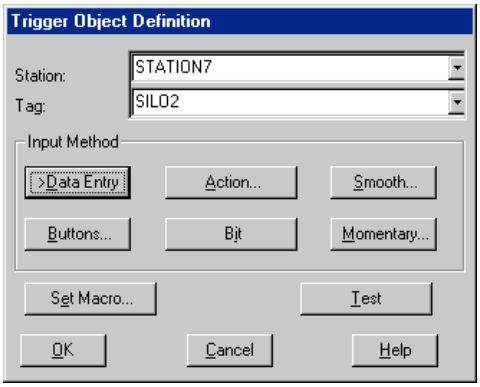
Image ⇨ Edit ⇨ Operations ⇨ Trigger

➤ **To define trigger objects:**

Select the required object and do one of the following:

- Click the **Trigger Definition** tool in the **Objects** toolbox.
- Right-click and select **Trigger** from the popup menu.
- Select **Trigger Definition** from the *Operations* menu.

The *Trigger Object Definition* dialog is displayed:



For Text Table objects, the **String** button will appear in the **Input Method** field instead of **Data Entry**. For Time objects, the **Time** button will appear in the **Input Method** field instead of **Data Entry**. For Date objects, the **Date** button will appear in the **Input Method** field instead of **Data Entry**.

The following fields are available:

Station	Specifies the Wizcon station to which the tag belongs.
Tag	Specifies the tag associated with the object.
Input Method	The value input methods described above: **Data Entry**, **Action**, **Smooth**, **Buttons**, **Bit**, **Momentary**,
Set Macro	Activate to define macros for trigger objects. *Not applicable on the Web.*
Test	Activate to test the input method and adjust its appearance.

Any object (static, dynamic, segment) can be defined as a trigger object. However, only one tag value input method can be assigned per object.

➤ **To cancel a trigger object definition:**

Select the trigger object you want to cancel, right click, and select **Remove Trigger** from the pop-up menu.

or,

Select the trigger object, point to **Operations** in the *Edit* menu, and select **Remove Trigger**.

The tag value input method that you select in the dialog will be marked by an arrow.

Note that for the *Data Entry*, *Smooth*, *Bit*, and *Test* dialogs described on page 13-48, the last position of the dialog will be saved (unless you activated the **Cancel** button before completing the operation).

This means that you can drag the dialog to any position on the screen. Thereafter, whenever that dialog is invoked, it will appear in its last position.

However, the dialog position is relative to the window position. If the window is moved and then the dialog is invoked, it will appear in the position it was last saved, relative to the new location of the window.

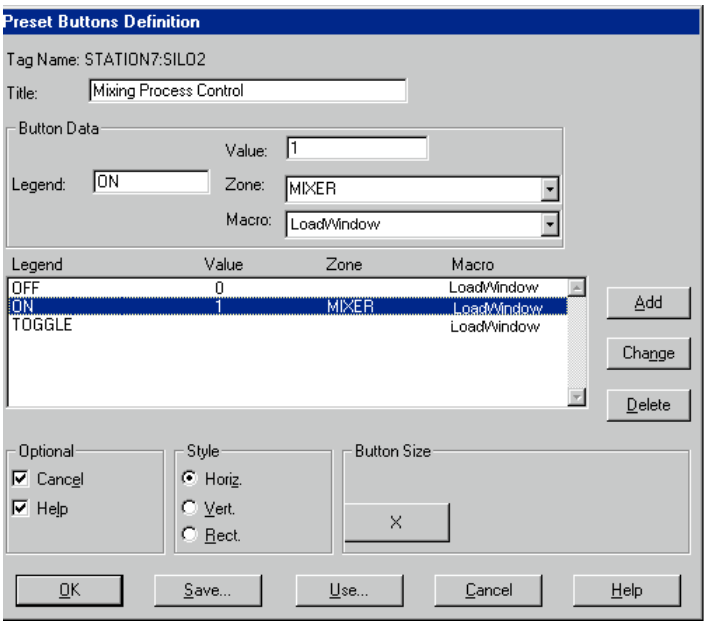
The following sections describe the steps you need to take before you can use an input method.

Action Buttons

If you want to use the **Buttons** input method, you must first define the action buttons.

➤ **To define action buttons:**

Activate the **Buttons** button in the *Trigger Object Definition* dialog. The *Preset Buttons Definition* dialog is displayed:



The following options are available:

Title	The button group title (optional).
Legend	A description of the buttons. In this field, any button letter can be highlighted for keyboard entry, by prefixing it with the ampersand (&) character.
Value	The button value. If the object was defined as a string tag (as described in the section called **Tag Value String** earlier in this chapter), the value can be any numeric, alphabetic, or alphanumeric value.
Zone	The zone to jump to when the button is activated. This field is optional.
Macro	The macro to activate when the button is activated. This field is optional. *Not applicable on the Web.*
Add	The button is added to the list.
Change	The button definition is changed.
Delete	The button is deleted from the list.
Style	The button arrangement style: **Horiz**, for horizontal rows. **Vert**, for vertical columns. **Rect**, for rectangular arrays.
Optional	Optional buttons (Cancel and Help).
Button Size	Button size adjustment. Use the <arrow> keys to change the size of the example button that appears in the field. The <PageUp> and <PageDown> keys also affect the size of the example button, and the <Home> key changes the button back to its default size.
Save	The button definition is saved in a file.

Use Enables the operator to apply files that contain tag values. The files must have been saved earlier with the **Save** button. Tag value files can be edited using the system editor.

A new button can be defined and added to the list by activating the **Add** button. A button can be selected from the list, its characteristics modified, and the revised definition saved, by activating the **Change** button. A button is deleted from the list by activating the **Delete** button.

As mentioned on the previous page in the **Legend** field explanation, if an ampersand (&) character precedes any part of the text specified in the **Legend** field, the operator will be able to activate that button by pressing the <Alt> key together with character that follows the ampersand (the character that will be underlined). For example, if a button legend is specified as O&FF, the actual text will appear as **O<u>F</u>F**, and the operator will be able to activate that button by pressing the <Alt> key together with the <F> key

In the **Macro** field, you can specify a macro that you want to be activated by typing the name of the macro, or by clicking on the arrow to the right. When you click on the arrow, a list of predefined macros will appear for you to select from.

Note: If more than one operation is assigned in this dialog, the operations will be performed in the following order: goto zone, tag assignment, run macro. If one of the operations fails, the next operation will not be executed.

➤ **To save a button definition:**

Activate the **Save** button and type a name.

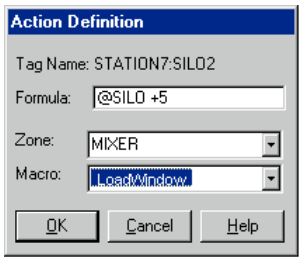
Once action buttons are saved for a specific object, they will appear each time the operator clicks on that object. Then, clicking on any button will apply that value to the tag.

Action

If you want to use the Action input method, you must first define an Action formula.

➤ **To define an action formula:**

Activate the **Action** button in the *Trigger Object Definition* dialog. The *Action Definition* dialog is displayed:



Enter the tag name and formula of the value to be applied whenever the operator clicks on that object.

For the tag value formula you can use any of the following formats:

@ tag op val

val op @ tag

val

@ tag

where @ alone is the current tag, *tag* is the name of any tag, *op* is any valid operator including operators +,-, /, *, % (percent denotes modulus, as in C programming language), &, |, or ^ (bitwise AND, inclusive OR and exclusive OR). *Val* is any numerical value.

String Tags

If the tag associated with the object was defined as a string tag you can enter any character string in the **Formula** field, including a blank string (no characters at all). The **Formula** edit field can have up to 55 characters only.

If the formula begins with the *at* character (**@**) the Image interprets the rest of the string as a tag. If you want to see the *at* character (**@**) typed, place a space before it. The tag in the formula can also be of a numerical type. In this case, the value is converted to a string and written to a string tag.

In addition, you can enter a zone to jump to, or a macro to activate, whenever that object is selected.

In the **Macro** field, you can specify a macro that you want to be activated by typing the name of the macro, or by clicking on the arrow to the right. When you click on the arrow, a list of predefined macros will appear for you to select from.

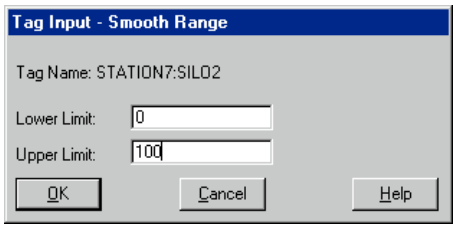
Note: If more than one operation is assigned in this dialog, the operations will be performed in the following order: goto zone, tag assignment, run macro. If one of the operations fails, the next operation will not be executed.

Smooth Variation Range

If you want to use the Smooth input method to specify tag values to be applied online, you must first define the variation range.

➤ **To define the smooth variation range:**

Activate the **Smooth** button in the *Trigger Object Definition* dialog. The *Tag Input - Smooth Range* dialog appears:



Enter values for the upper and lower range limits. These values will be used as the range within which values can be selected to apply to the tag.

Momentary Trigger

A Momentary Trigger is an object that is used to change a tag value in a one-shot way. Usually such operations are required for a digital tag that controls some field operation which is activated by a high value (one 1) for a short period of time, followed by a low value (zero 0).

The neutral way to implement such an operation is by using the **button down button up** pair of user actions. This operation is actually a **button click** that is regarded as one operation. The Momentary trigger operation will regard a **button click** as two operations.

All tags can be used for the Momentary, trigger, including string tags.

Functional Description

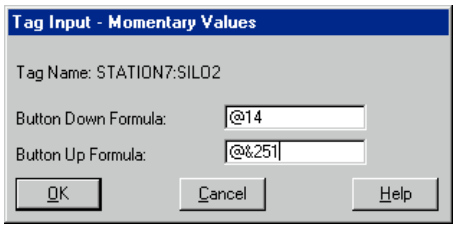
Following is a description of the way Momentary Trigger operates:

- All tags can be used for the Momentary, including string tags.
- A formula, identical to the one used in the Action trigger, can be assigned for **button down button up** operations.

- Any Dynamic object, in an Image, that should reflect the tag value change will be updated, while the button is still pressed.
- Only when the user releases the mouse left button (**button up**) the Up formula is calculated and the result value will be written to WizPro, in the same way as the Down value.
- If the user releases the button in a place not above the trigger object, the Up value will not be written.
- To set and reset a bit in an Analog tag, the OR and AND operations can be used. For example, for 8 bit analog tag to set the 3rd bit use the formula '@ | 4'. To reset the same bit, use formula '@ & 251'. The same principal can be applied to any bit and for 16 or 32 bits analog tags.

➤ To define a Momentary Trigger

1. Select the object you wish to define as a Momentary Trigger.
2. Click the **Trigger Definition** tool in the **Objects** Toolbox. The *Trigger Object Definition* dialog appears.
3. Press the **Momentary** button and the *Tag Input - Momentary Values* dialog is displayed.



4. Enter the Value that Wizcon will write to the tag when you press the left mouse in the **Button Down Formula** field.
5. In the field **Button Up Formula** enter the value that Wizcon will write as soon as you release the mouse button. For new definitions, the default values are 1 and 0 for Down and Up respectively.

6. Press **OK** to complete the operation.

or,

From the *Edit* menu, point to **Operations** and select **Trigger**. The *Trigger Object Definition* dialog opens. Press the **Momentary** button to display the *Tag Input - Momentary Values* dialog; as shown on the previous page. Follow steps 4-6 as given on the previous page.

Input Method Testing

After you select an input method and make the necessary preparations, you can test the action that will occur whenever you click on the trigger object. The test that you perform will invoke the particular input method dialog box.

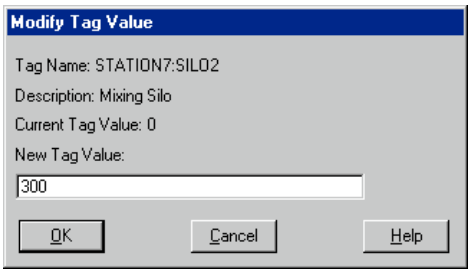
➤ **To test an input method:**

Activate the **Test** button in the *Trigger Object Definition* dialog. A dialog will appear for that particular Input method (excluding the Action method). The dialog is placed in a default location on the screen, but can be moved by placing the cursor on the Title bar, clicking, and dragging the box to any location. The new location will be recorded and the dialog will thereafter appear in the new location, relative to the Image window lower-left corner.

The following sections describe each of the tag value input method operations in more detail.

Data Entry Value

When the Data Entry Value method is being used and the operator clicks on a trigger object, the *Modify Tag Value* dialog appears:

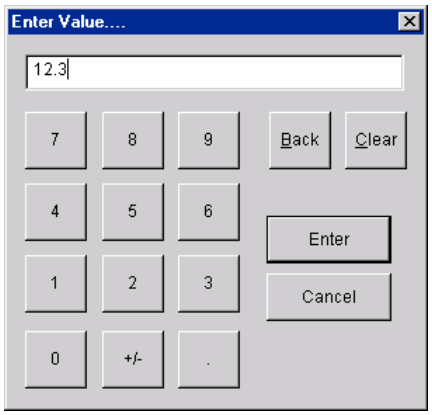


Enter a value and activate the **OK** button to apply it immediately to the tag.

Note: If the object is a string tag object, you can enter a textual value in the New Tag Value field. For more information about string tag display, see the section called Tag Value String, on page 13-30.

To enable Wizcon to support touch screens, a new type of trigger is available. In the Wiztune.dat file, manually set the tuning parameter
IMG_TRG_KEYPAD = YES
Default is NO
Restart Wizcon for it to take effect.

The Key Pad is available for Data Entry triggers of numeric type. The following dialog will be opened:

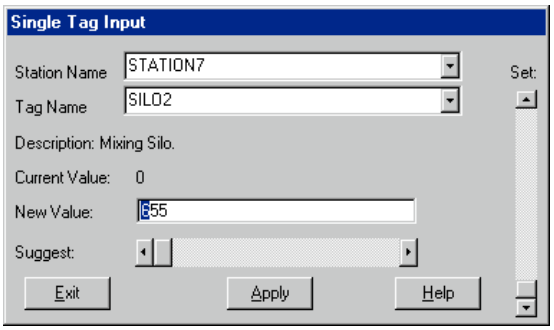


Note that keypad is not supported in browser.

The keypad operates as any other numeric keypad. Press the **Back** button to delete one number back. Press **Clear** to erase all numbers in the field.

You can set the location of your keypad anywhere on the screen. Press the **Test** button and you can move the keypad to any location. When you reopen Wizcon and operate the keypad, it will be opened at the same location as you selected.

When the Smooth Variation method is being used and the operator clicks on a trigger object, the *Single Tag Input* dialog is displayed:



The following options are available:

New Value New tag value (numerical).

Suggest Slider for suggested values.

Set Slider for tag values.

Apply Applies the value to the tag.

Note: Single Tags are described in more detail in Chapter 7, Tags.

When the Bit method is being used and the operator clicks on a trigger object, the *Tag Input: Bit Operation* dialog appears:

For analog tags, the **Toggle** button in the dialog will not appear, since it is only relevant for digital tags.

The action button functions are:

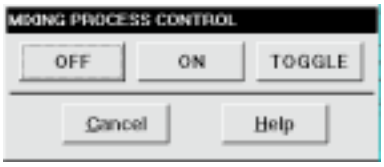
On	Sets the tag value to 1.
Off	Sets the tag value to 0.
Toggle	Toggles between 1 and 0 for digital tags only.

Note: If the object was defined as a string tag (as described in the section called Tag Value String, on page 13-30), this trigger type will be disabled.

When the Buttons method is being used and the operator clicks on a trigger object, a dialog appears with the predefined buttons. (Button definition is described earlier in this chapter.)

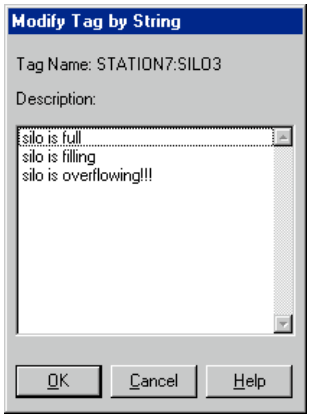
Each button represents a different value. When a button is activated, its corresponding value is immediately applied to the tag.

The following is an example of a *Button* dialog:



Note: Refer to the menu (button box) designed in Step 11 of the Getting Started Guide for more details about defining button boxes.

When the String method is being used (a Text Table was defined for a trigger object) and the operator clicks on the object, the *Modify Tag by String* dialog is displayed:



Note that to use the String input method, a string must first be defined by activating the **Textable** button in the *Text* dialog. (For more information about text tables, see the section called *Dynamic Text* on page 13-23.)

In the *Modify Tag* dialog, select a predefined string from the list. The values corresponding to the string you selected will immediately be applied to the tag.

Date

When the Date method is being used (the object was defined for date display, as described in the section called *Dynamic Text* on page 13-23.) and the operator clicks on the object, the *Set Date* dialog is displayed:

After the new date is entered, the date display object will immediately be updated.

Time

When the Time method is being used (the object was defined for time display, as described in the section called *Dynamic Text* on page 13-23.) and the operator clicks on the object, the *Set Time* dialog is displayed:

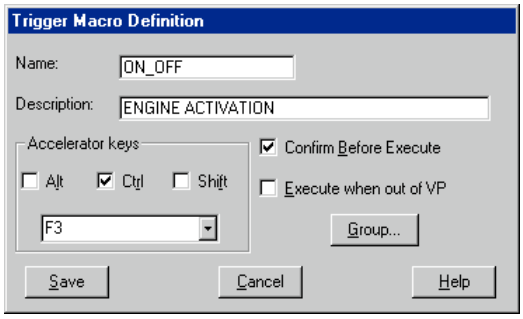
Note: If the time display was not defined as Time with Seconds, the seconds box will not appear in this dialog.

After the new time is entered, the time display object will immediately be updated.

Once you have defined Trigger objects, you can define special macros (keys or key combinations) to apply Trigger object operations. (For more details about Wizcon Macros, refer to *Chapter 21, Macros*.

➤ **To define Trigger macros:**

Activate the **Set Macro** button in the *Trigger Object Definition* dialog. The *Trigger Macro Definition* dialog is displayed:



The following options are available:

Name	Specifies the name of the macro.
Description	Specifies a brief description of the macro.
Accelerator Keys	Alt, Ctrl, Shift, and Function keys that can be used in combinations to invoke the macro.
Confirm Before Execute	Causes Wizcon to prompt you to confirm the execution of a macro before it is executed.

Execute when out of VP	Causes a macro to be executed even when the trigger object does not appear visually in the Image window.
Group	Used to assign groups to operators for macro authorization.

Note that trigger macros will only be executed if the **Trigger** mode is activated (by selecting **Trigger On** from the *Modes* menu, in the Image).

Marking Trigger Objects

Image Menu ⇨ Options ⇨ Mark Triggers

Image ⇨ Toolbar ⇨

➤ **To mark trigger objects on the screen:**

Select **Mark Triggers** from the *Options* menu in the Image.

or,

Select the **mark trigger toggle** from the Image toolbar. After you select this item, a red-colored hand will appear in all the trigger objects in the Image.

➤ **To unmark the objects:**

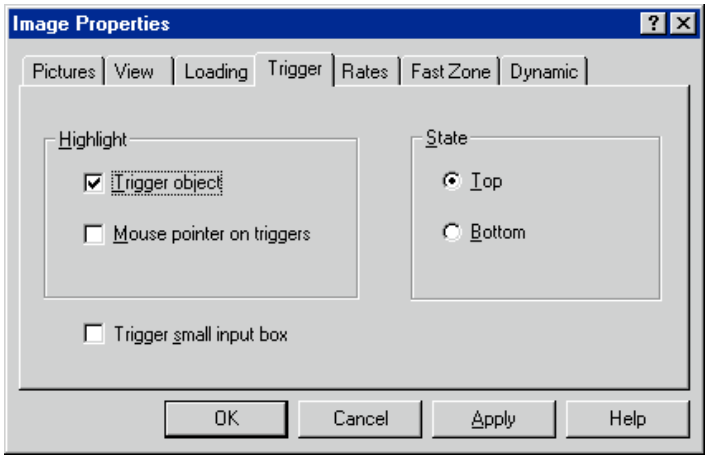
Reselect **Mark Triggers**.

In addition, if the **Trigger On** mode is active, the hand cursor that appears will turn red whenever you click and hold the button down, and move the cursor within the borders of the object. When you leave the object borders (while still holding the button down), the hand will turn white.

Note: The <Spacebar> can be used to simulate the mouse button.

The **Mark Triggers** function will apply to any object. However, if an object is marked (with a red hand) to indicate that it is a trigger object, but that object is dynamically or manually transformed (moved, rotated, scaled, etc.), the trigger mark may disappear, or will not appear in its proper location. If this happens, you can press <ALT+R>, or click on the <r> button in the Image window, to redraw the Image. The hand will then appear in its proper location.

In addition, you can specify YES for the **Trigger** tab in the *Image Properties* dialog to cause trigger objects to be highlighted (outlined with dashed lines) when you click on the object and hold the mouse button down. The default for this parameter is NO.



The *Image Properties* dialog is described in more detail in the *Image Properties* section of *Chapter 12, Image Editor*.

Tag Value Sliders

Image ⇨ Object Toolbox ⇨

Image Menu ⇨ Edit Drawings ⇨ Widgets ⇨ Slider

Tag value sliders (widgets) can be designed and used in an Image to change and read tag values in a simple visual manner. The sliders can be positioned anywhere in the Image and will automatically reflect any change in the tag value that occurs in the field.

The following is an example of a slider:

The following points should be noted when working with tag value sliders:

- Tag value sliders are system windows that operate using system controls.
- Tag value sliders are automatically generated as trigger objects, and therefore can only operate in the **Trigger** mode (described in the section called **Trigger On Mode** in *Chapter 12, Image Editor*.).

➤ **To design a slider:**

From the *Edit* menu, point to **Drawings** and then to **Widgets**.

Select **Slider** from the popup menu.

or,

Click the **Slider** tool in the **Objects** Toolbox. The *Slider properties* dialog is displayed:

The following fields are available:

Station — Specifies the Wizcon network station to which the tag belongs. For a list of stations from which you can select, click on the arrow to the right of the field.

Tag — Specifies the tag to be associated with the slider. For a list of tags from which you can select, click on the arrow to the right of the field.

Value Assignment

Select **On Dragging** to cause the value of the associated tag to change as the slider is dragged.

Select **On Dropping only** to cause the value of the associated tag to change only when you complete the dragging (release the mouse button) and place the slider on a specific value.

Select **On Dragging to Image, on dropping to Tag** to cause the value of the associated tag to change and be reflected in the Image only as the slider is being dragged, and change and be written to the PLC when you complete the dragging (release the mouse button) and place the slider on a specific value.

Select **Snap to Tick** to cause the slider to snap to ticks on the value scale whenever it is moved, or the tag value changes in the field.

Limits

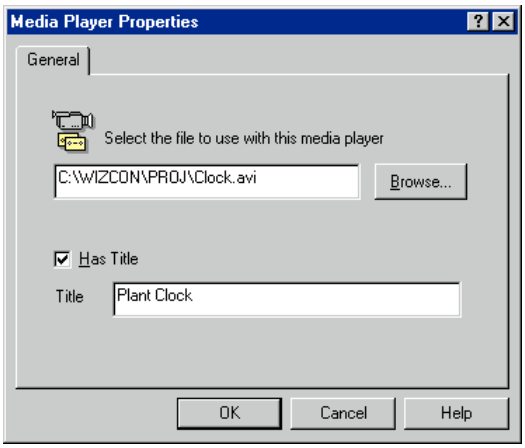
Select **Default tag limits** to cause the value scale limits to be those you defined for the tag in the *Tag Definition* procedure, (refer to *Chapter 7, Tags*, for more detail).

In the **From/To** fields you can specify the values you want for the upper and lower limits of the tag scale.

The Media Player enables you to play any Media file that is installed on your computer. Usually this object is used to play .AVI files that display some information to the operator.

➤ **To define a new media object:**

1. Select the **Media** tool from the **Objects** Toolbox.
2. Draw a rectangle in the initial size you wish.
3. The *Media Player Properties* dialog opens where you can select the Media device (file) you wish to play.
4. You can set the *Media* window to include a title bar with your own text.



The Media device will be displayed *Stretched* to the object size. Small control bar is displayed at the bottom on the object with the options to Play, Stop, Pause, Fast Forward and Rewind.

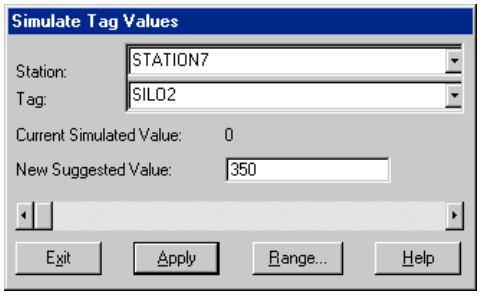
You can select and edit the object size and the location can be manipulated as any other object. To change the object properties, double-click on it.

Menu ⇨ Options ⇨ Simulate

After dynamic objects are defined, the operator can test an object's response to different tag values using a Wizcon mechanism that simulates tag values without affecting the tag itself.

➤ **To simulate tag values:**

Select **Simulate** from the *Options* menu. The *Simulate Tag Values* dialog appears:



The following options are available:

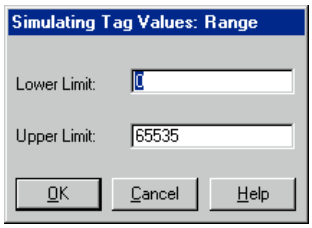
Station	Specifies the Wizcon network station to which the tag belongs.
Tag	Specifies the tag to be simulated.
Current Simulated Value	Specifies the value being used for simulation.
New Suggested Value	Suggested simulation value. Enter a value or move the slider below. Extreme left is the lower range limit, extreme right is the upper range limit.
Exit	Exits the simulation.

Apply	Applies the suggested value.
Range	Range of simulation values for the slider.

After you specify the value you want to simulate in the **New Suggested Value** field and activate the **Apply** button, the value you specified will be simulated, and any dynamic or trigger object associated with that tag will be affected accordingly.

➤ **To set the simulation range:**

1. Activate the **Range** button in the *Simulate Tag Value* dialog. The following *Simulating Tag Values: Range* dialog is displayed:



2. Enter the range limits. The scroll bar in the *Simulate Tag Values* dialog will immediately be adjusted to the new range. (See the previous page).

Chapter 14
Creating Trend Viewers

About this chapter:

This chapter describes how to create and modify a Trend Profile to compare device functionality and correlate actions and responses. It also describes how to create a Trend Viewer, that displays these past and current events in a browser according to the definitions specified in the Trend Profile.

Overview, on the following page, describes an overview of Trend Profiles and describes how to interact with a Trend Viewer on the web.

Creating/Modifying Trend Profiles, page 14-7, describes how to define and modify a Trend Profile.

Creating Trend Viewers, page 14-22, describes how to create a Trend Viewer by generating an HTML page from the Trend Profile.

Importing Trend Profiles, page 14-25, describes how to import a Trend Profile from another Wizcon for Internet application.

Changing the Default Location of Trend Profile Files, page 14-26, describes how to change the default location of Trend Profile files.

Trends are used to compare device functionality and correlate actions and responses. Their data can be displayed in one of two modes:

- **Online** mode in which the Trends are constantly updated according to changes in field values.
- **History** mode in which the Trends can be configured to display tag values that occurred over a specified time period.

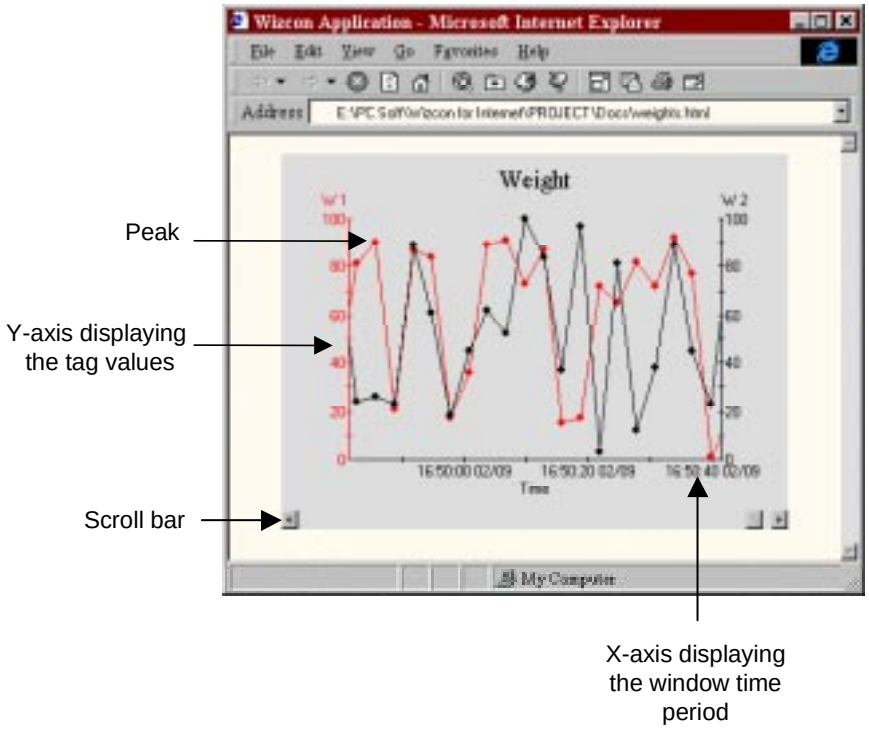
Trend Profile

A Trend Profile contains the definitions that determine the way graphical views of past and current activities recorded by the Wizcon for Internet system are displayed in a browser.

Trend Viewer

A Trend Viewer displays online past and current activities recorded by the Wizcon for Internet system according to definitions specified in the Trend Profile.

Trend Viewers are created by generating an HTML page from a Trend Profile, and publishing the resulting page on the Web. An example of a Trend Viewer is shown below:



Note that:

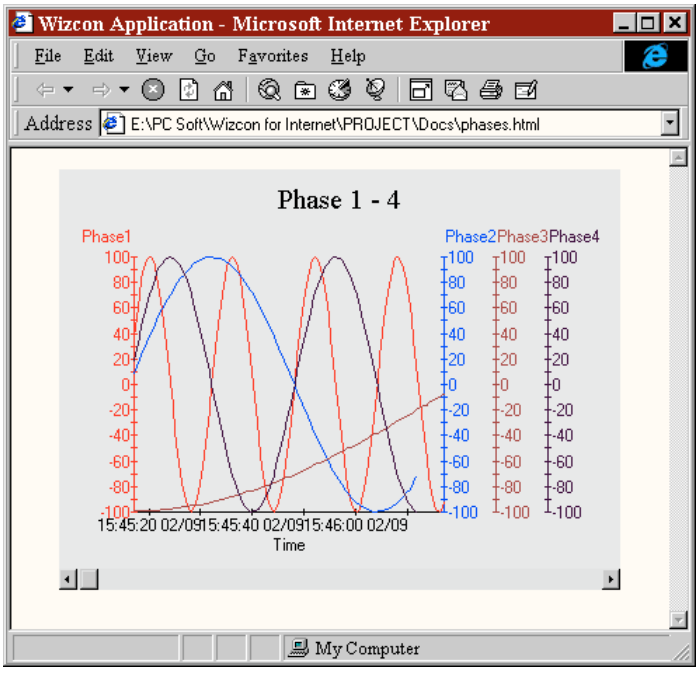
- The X-axis displays the window time period, meaning how many minutes of data is displayed in the window at any given time. In the example on the previous page, one minute of data is displayed in the window. Specifying the window time period is described on page 14-12.

  The window time period display can be specified to show the date, the time or the date and time together, as described on page 14-17, and shown on the previous page.

- The scroll bar is positioned just under the monitored data. It automatically moves with the data in a Trend displaying online data. If the trend displays historical data, the scroll bar is positioned on the far left of the Trend Viewer and is clicked to view the accumulated data.

- There are two Y-axis displaying tag values. Each axis represents a line in the graph. The axis is displayed in the same color as the line it represents. The Y-axis on the left belongs to the line representing the first tag added to the Trend. The Y-axis on the right belongs to the line representing the second tag added to the Trend.

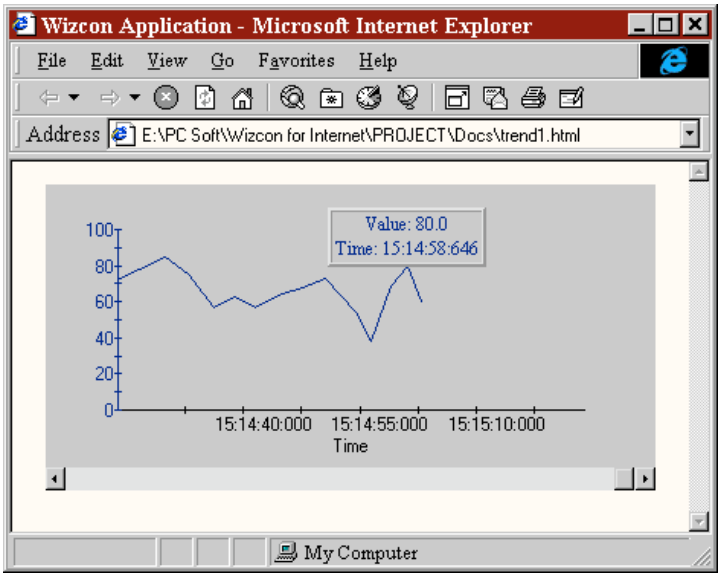
If a third tag was added to the Trend, the Y-axis of the line would be displayed to the right of the second tag added, and so on, as shown in the example below.



Interacting with Trend Viewers

You can interact with a Trend Viewer, as follows:

- Click on the scroll bar to scroll the window and display additional data.
- Click on a peak to view the tag values of the line and the time the data was monitored, as shown in the picture below. The time is displayed in the format specified in the **X-Axis time format** tab.



Creating/Modifying Trend Profiles

Trend Profile definition involves the following four steps:

- **Adding a Tag to the Trend Profile**, in which you associate Tags to the Trend Profile, as described on page 14-8.
- **Specifying the Date and Time**, in which you determine a time range for data monitoring, in the **Time** tab, as described on page 14-12.
- **Selecting the X Axis Time Format**, in which you specify a time format for the X axis, in the **X Axis time format** tab, as described on page 14-17.
- **Specifying Trend Profile Display**, in which you add a title to the Trend Profile, specify background and foreground color, and scroll steps in the **Display** tab, as described on page 14-19.

Trend Profiles can be modified, as described on page 14-21.

Adding a Tag to the Trend Profile

The first step to creating a trend profile is to specify the tags that will be included in the profile. You can add up to 16 tags to a single Trend Profile. Each tag is represented in the Trend by a line.

When you add a tag to a Trend Profile, you must also determine the type of line that will appear in the Trend Viewer.

You can choose between:

line with markers

curved line

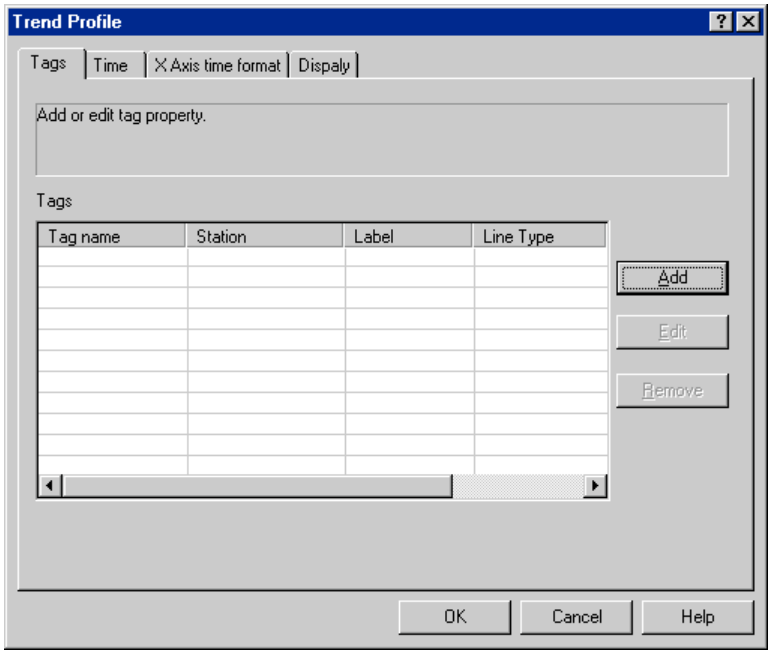
The Wizcon system automatically allocates a color for the line. If you add more than one tag to a Trend Profile, the system allocates a different color for each line.

➤ **To add a tag:**

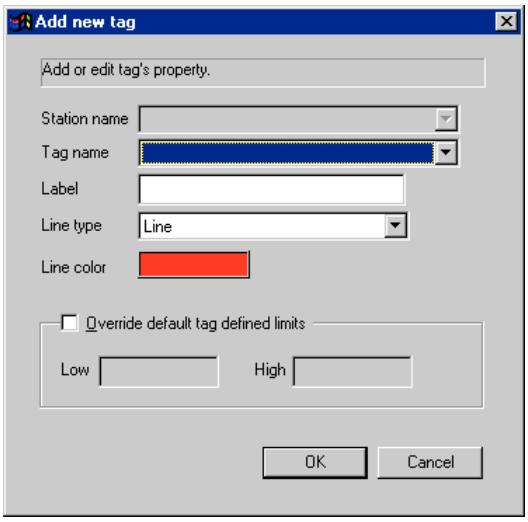
1. Click the **New Trend Profile** icon in the toolbar.

   or,

   In the All Containers section of the Wizcon Application Studio, right-click **Trends Profiles** and select **New Profile** from the pop-up menu. The *Trend Profile* dialog is displayed:



2. Activate the **Add** button. The *Add new tag* dialog is displayed:



3. (If the network is configured). Click the **Station name** box and select a station from the list of available stations.

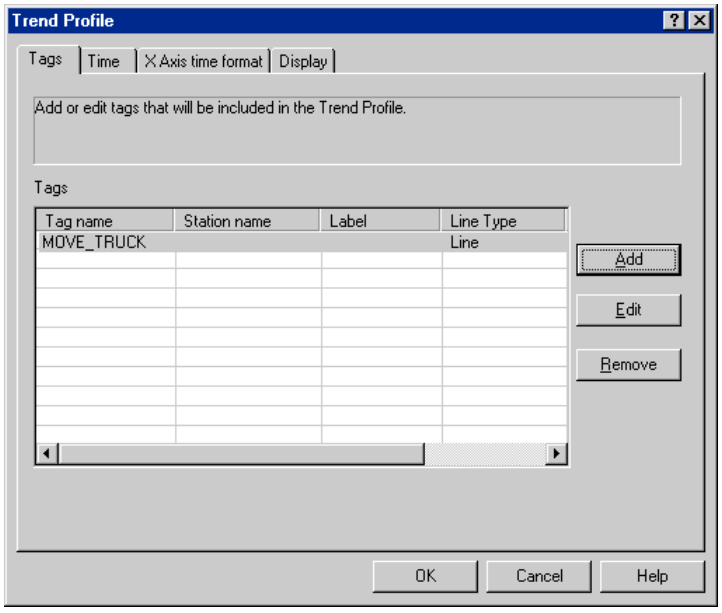
4. Click the **Tag name** box and select a tag from the list of available tags. Note that the low and high limits of the tag that were specified during tag definition, appear in the **Low** and **High** fields at the bottom of the dialog.

5. Click the **Line type** box and select a line type. You can choose from **Line**, to display a curved line, or **Line with Markers** to display a line upon which tag value changes are indicated with markers.

6. (Optional) Click the **Line color** box to change the color of the line. The standard *Color* dialog is displayed in which you can determine a different color. If you are adding more than one tag to the Trend Profile, the Wizcon system automatically allocates a different color for each line.

7. (Optional) Select **Override default tag defined limits** to set new limits for the tag. This will determine the high and low point of the line on the Y bar of the Trend Profile.

8. Click **OK**. The *Add new tag* dialog is closed and the options you specified are displayed in the *Trend Profile* dialog, as shown below:



To add additional tags to the Trend Profile, repeat steps 2 to 8. You can add up to 16 tags to a single Trend Profile.

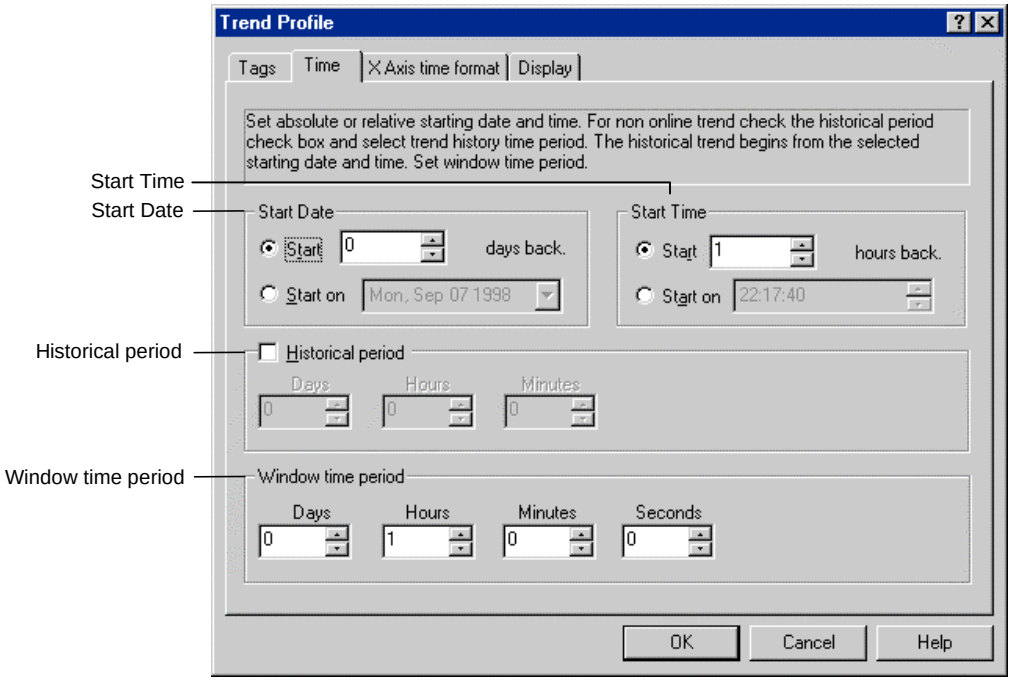
Specifying the Date and Time

The starting date and time for the monitoring and display of data is specified in the **Time** tab. While specifying the date and time, you can also determine whether the Trend will display online or historical data.

Specifying the starting date and time is common to both online or historical data display and is determined in one of two ways:

- **Absolute**, meaning the current time and date. For example, if you specify the date 08-05-98, and the time 15:10:00, the data is monitored from 3:10 PM on August 5, 1998.
- **Relative**, meaning relative to the time and date the Trend was opened. For example, if you specify a starting time of 3 days and 2 hours back, the data displayed is the data monitored 3 days and 2 hours before the Trend was opened.

The **Time** tab is divided into four components, as shown below:



- **Start Date**, that specifies a relative or absolute starting date for data monitoring.
- **Start Time**, that specifies a relative or absolute time for data monitoring.
- **Historical period**, that specifies the time span for data monitored in historical mode only. This component is only used when determining historical data display.
- **Window time period**, that specifies a time span for the data displayed in a window at any given moment. For example, the window can display one minute of monitored data. If the data is not frequently updated, it is recommended to specify a large window time period so that you can view the data without having to use the scrollbar. If the data is frequently updated, it is recommended to specify a small window time period.

Specifying Online Trends

When specifying a Trend that will display online data:

- Select a starting time/date for data monitoring, in the **Start Time** or **Start Date** fields.
- Specify a time span for the data displayed in a window at any given moment, in the **Window time period** field.

Specifying Historical Trends

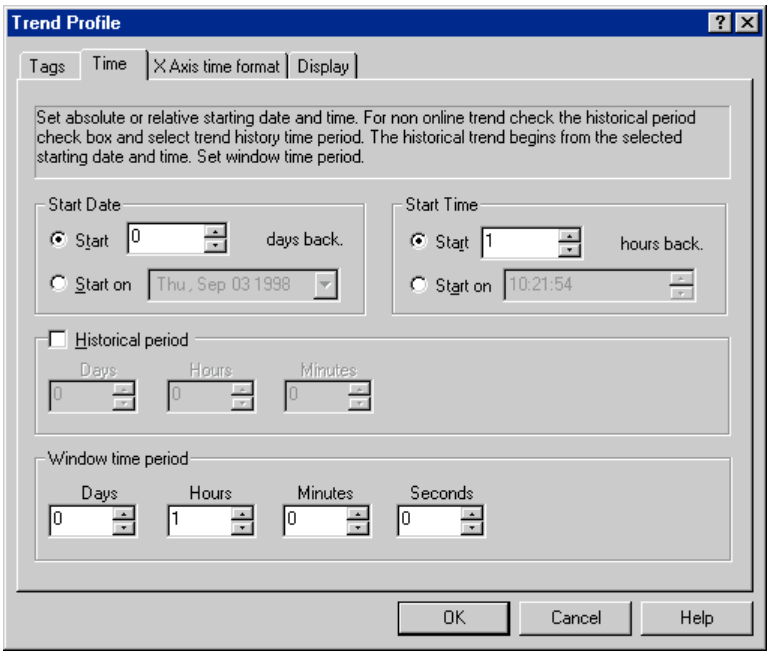
When specifying a Trend that will display historical mode data:

- Select a starting time/date for data monitoring in the **Start Time** or **Start Date** fields.
- Specify the time span, or amount, of monitored data, in the **Historical Period** field. For example, if you specify 2 days and 2 hours, the amount of data that is displayed is the data accumulated in 2 days and 2 hours, starting from the specified start time.
- Specify a time span for the data displayed in a window at any given moment, in the **Window time period** field.

When specifying a start time, take into account the historical time span. For example, if you specify a start date of two days back from runtime and a historical time span of three days, only the first two days of data will be displayed. To display all three days of the historical time span, specify a start time of at least three days.

➤ **To specify the date and time:**

Select the **Time** tag in the *Trend Profile* dialog. The following page is displayed:



The following options are available:

Start Date

Specifies the date from which the data will begin to be monitored. You can choose from:

Start: Specifies a relative start date: For example, if you specify 4, the data is monitored four days before the Trend is opened during runtime..

Start on: Specifies an absolute start date: For example, if you select 1 August, 1998, the data is monitored from this date.

Start Time	Specifies the time from which the data will begin to be monitored. You can choose from: **Start**: Specifies a relative start time. For example, if you specify 2, the data displayed is the data monitored 2 hours before the current time. **Start on**: Specifies an absolute start time. For example, if you specify 15:00:00, the data is monitored from 15:00:00 on the current day. If the Trend is opened during runtime at 16:00 you will view one hour of monitored data. If the Trend is opened during runtime at 14:00, you can begin to view data after one hour.
Historical Period	Specifies the time span for data monitored in historical mode only.
Window time period	Specifies how a time frame for the data monitored in the window at any given time. For example, if you want a time frame of 1 minute and 30 seconds, make sure that the **Days** and **Hours** fields display 0. Then enter 1 in the **Minutes** field and 30 in the **Seconds** field.

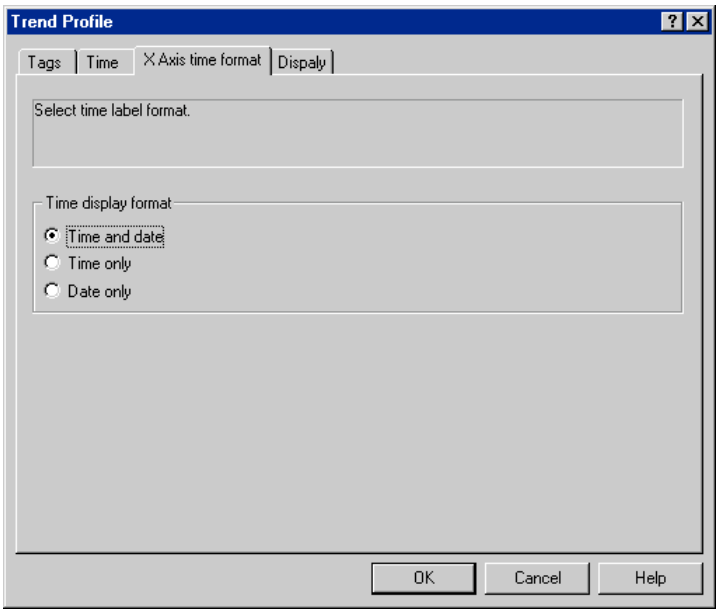
Specifying the X Axis Time Format

The time format displayed on the X axis of the Trend is configured in the **X Axis** tab. You can display:

- The time.
- The date.
- The time and the date together, as shown in the example below.

➤ **To specify the X axis time format:**

Select the **X Axis time format** tab in the *Trend Profile* dialog. The following page is displayed:



The following options are available:

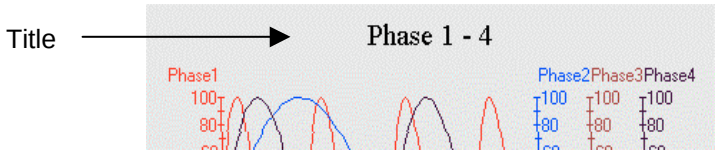
Time and date Select to display the time and date.

Time only Select to display the time.

Date only Select to display the date.

Specifying Trend Profile Display

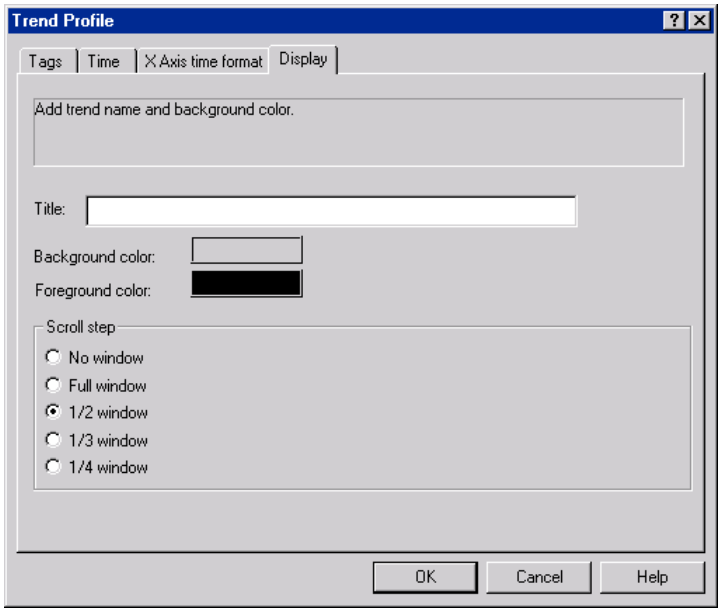
You can specify a title that will appear at the top of the Trend Viewer, as shown below:



You can also determine the background color of the Trend Profile and the color of its time display, labels and title using the foreground color.

➤ **To specify Trend Profile display:**

1. Select the **Display** tab in the *Trend Profile* dialog. The following page is displayed:



2. Specify a title for the Trend Profile in the **Title** field.

3. Click the **Background color** box to display the standard *Color* dialog in which you can determine a color for the background of the Trend Profile.
4. Click the **Foreground color** box to display the standard *Color* dialog in which you can determine a single color for the time display, labels and title of the Trend Profile.
5. Click on the **Online scroll step** to regulate automatic scrolling**.** Default – ½ window.

➤ **To regulate automatic scrolling:**

From the *Options* menu, select **Online scroll step**. A popup menu displays the following options:

Select	**To enable**
No step	one small bar at a time appears on the time scale.
Full window	A scroll of one full window.
1/2 window	The default step. A scroll of one-half of the current window size.
1/3 window	A scroll of one-third of the current window size.
1/4 window	A scroll of one-fourth of the current window size.

Modifying Trend Profiles

Trend Profiles can be modified.

➤ **To modify a Trend Profile:**

In the All Containers section of the Wizcon Application Studio, click **Trends Profiles** and double-click the Trend Profile you want to modify from the List of Trend files. The *Trend Profile* dialog is displayed in which you can modify the Trend.

A Trend Viewer displays online past and current activities recorded by the Wizcon for Internet system according to definitions specified in the Trend Profile.

Trend Viewers are created by generating an HTML page from the Trend Profile, and publishing the resulting page on the Web.

This section describes how to generate a single HTML page that contains the Trend Viewer. For details on generating a single HTML page that contains two or more objects, refer to *Chapter 15, Generating HTML Pages*.

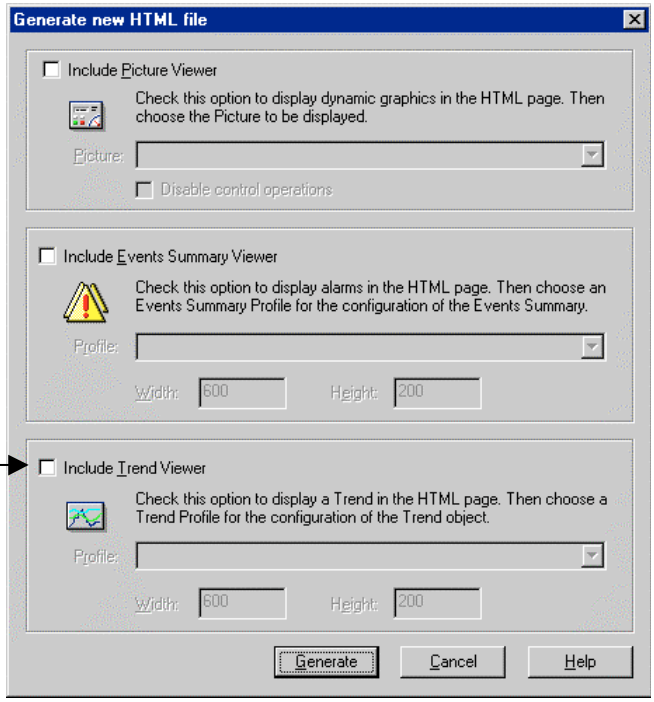
For more details about publishing, refer *to Chapter 15, Generating HTML Pages*.

➤ **To create a Trend Viewer:**

1. Click the **New HTML File** , icon in the toolbar.

   or,

   From the All Containers section of the Wizcon Application Studio, right-click **HTML** and select **New HTML File** from the pop-up menu. The *Generate new HTML file* dialog is displayed:


Generate new HTML file
Include Picture Viewer
Check this option to display dynamic graphics in the HTML page. Then choose the Picture to be displayed.
Picture:
Disable control operations
Include Events Summary Viewer
Check this option to display alarms in the HTML page. Then choose an Events Summary Profile for the configuration of the Events Summary.
Profile:
Width: 600
Height: 200
Include Trend Viewer
Check this option to display a Trend in the HTML page. Then choose a Trend Profile for the configuration of the Trend object.
Profile:
Width: 600
Height: 200
Generate
Cancel
Help

   The dialog contains three sections: **Picture**, **Events Summary Profile** and **Trend Viewer**.

2. Click the **Include Trend Viewer** box to enable the fields in this section.

3. Click the **Profile** box and select a Trend Profile file from the list of available profiles.

4. (Optional). You can change the default width and height of the viewer in the **Width** and **Height** fields. It is recommended to generate the page first and view it in your browser, before changing the default options.
5. Click **Generate**. The *New File* dialog is displayed.
6. Enter a name for the HTML page and click **Save**. The page is generated. It is saved in the List of HTML files in the Application Studio.
7. Click on the page in the List of HTML files to display it in your browser.

Importing Trend Profiles

You can import a Trend Profile from another Wizcon for Internet application into a current application.

➤ **To import a Trend Profile:**

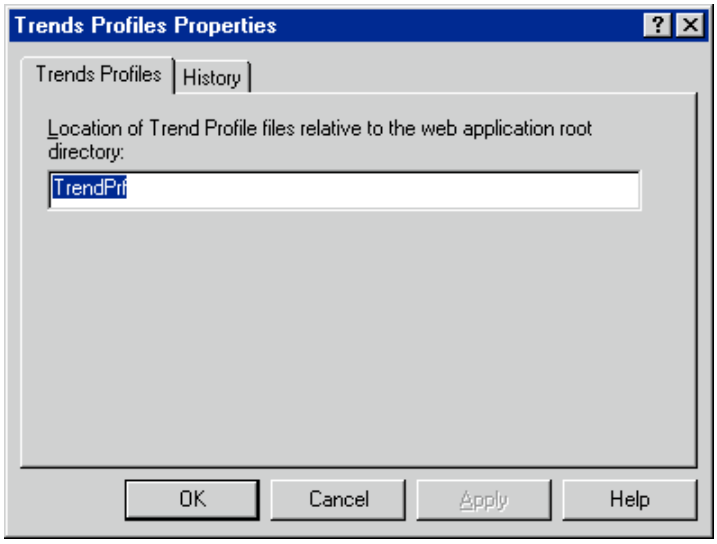
1. In the All Containers section of the Wizcon Application Studio, right-click **Trends Profiles**, and select **Insert Profile** from the pop-up menu. The *Import File* dialog is displayed.
2. Specify the name and location of the Trend Profile and click **Open**. The Trend Profile is imported into the current application and added to the List of Trend files in the Application Studio.

Changing the Default Location of Trend Profile Files

Trend profiles are saved by default in the **TrendPrf** directory that is stored under the root directory. You can change this default location in the *Trend Profiles Properties* dialog.

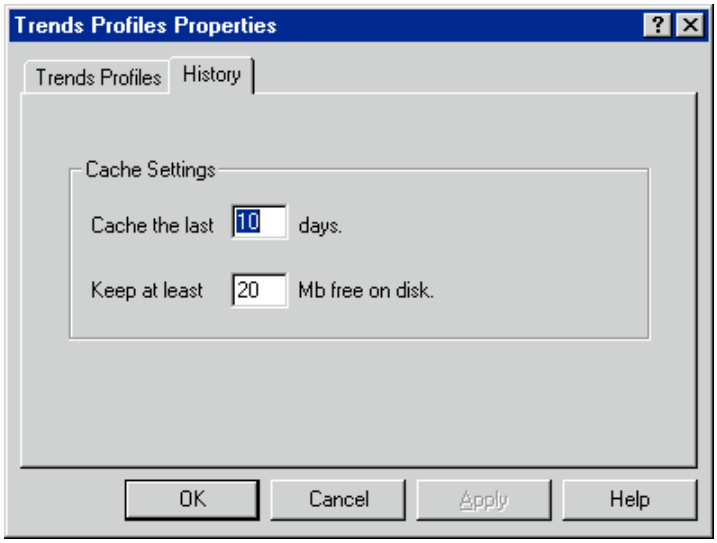
➤ **To change the default location of Trend Profiles files:**

In the All Containers section of the Wizcon Application Studio, right-click **Trends Profiles**, and select **Properties** from the pop-up menu. The *Trends Profiles Properties* dialog is displayed, as shown below, in which you can change the default location to the required location.



Trend Profiles Properties - History

In the History tab of the Trends Profile Properties dialog you can set the amount of time you wish to store history files on your PC. You can either set it 10 days back or 20Mb free on disk. (default).
If for example you set the cache 10 days and you run out of free disk space before that, the oldest history files will be erased and the newer ones kept.



Chapter 15
Generating HTML Pages

About this chapter:

This chapter describes how to generate and edit HTML pages in the Wizcon for Internet system. It also describes how to publish them on a Web server in order to view and interact with the application.

Overview, on the following page, gives basic information about what you need to know before generating HTML pages in the Wizcon for Internet system.

Generating HTML Pages with the Wizcon HTML Assistant, page 15-6, describes how to generate HTML pages using the HTML assistant, how to edit, import and delete an HTML file.

Building HTML Pages Manually, page 15-9, describes how to manually create HTML files using standard HTML editors. It also describes how to change the default location of HTML files.

Publishing an Application, page 15-13, describes how publish an application on a web server using the Netscape FastTrack server and the Microsoft Internet Information server.

Web Application Properties, page 15-16, describes how to specify Web application, Picture and Events Summary Profile and Trend profile file locations. It also describes how to specify historical cache settings.

Overview

Wizcon Applications are viewed online, by using Wizcon for Internet Java Applets, known as *Wizlets*, that are embedded in HTML pages displayed by the Web browser. The page also includes a parameter that specifies the input file. For example, a page containing an Events Summary Profile wizlet also contains the file name for the Events Summary Profile.

Wizcon for Internet includes an HTML assistant to help you generate HTML pages, as described on page 15-6, or you can build the pages manually, as described on page 15-9. The HTML pages are then published on a web server so that an operator can view and interact with a Wizcon for Internet application in a web browser.

HTML pages can be generated from the following:

- A Picture, as described in *Chapter 11, Creating Images and Picture Viewers*. The resulting page displays a Picture Viewer, an interactive graphical representation of the application process.
- An Events Summary Profile, as described in *Chapter 10, Creating Events Summary Profiles*. The resulting page displays an Events Summary Viewer in which you can view and interact with online alarms.
- A Trend Profile, as described in *Chapter 14, Creating Trend Viewers*. The resulting page displays a Trend Viewer in which you can view past and current events that occurred in the Wizcon for Internet system.

You can generate a single HTML page that will contain two or more objects, or an HTML page that will contain a single object.

Planning Ahead

It is recommended to decide how you want your application to be displayed before you begin to generate HTML pages.

If you choose to generate two or more HTML pages you will need to decide how to jump from one page to another. You can:

- Design a home page (the page that is displayed when the application is launched) that contains links to the other pages. For example, a link to the graphical representation and a link to the online alarms view, as shown below.

File Edit View Go Bookmarks Options Directory Window Help
Welcome to the Wizcon for Internet
Getting Started Application
Go to Plant Floor View
Go to Online Alarms View
Document: Done

- Determine which HTML page is displayed when the application is launched, for example, the page containing the Picture Viewer, and add a link to the page displaying the online alarms view, as shown below.

Generating HTML Pages with the Wizcon HTML Assistant

This section describes how to generate an HTML page with two or more Wizcon objects. Generating HTML pages with a single Wizcon object is described as follows:

- The Picture Viewer, that displays a graphical representation of a process, in *Chapter 11, Creating Images and Picture Viewers*.
- The Events Summary Viewer, that displays online alarms, in *Chapter 10, Creating Events Summary Profiles*.
- The Trend Profile Viewer, that displays Trends, in *Chapter 14, Creating Trend Viewers*.

Generating a Single HTML Page With Two or More Objects

HTML pages can be generated within Wizcon for Internet using the Wizcon for Internet HTML Assistant.

➤ **To generate a HTML page with two or more objects:**

1. From the *All Containers* section of the Wizcon Application Studio, right-click **HTML** and select **New HTML File** from the pop up menu.

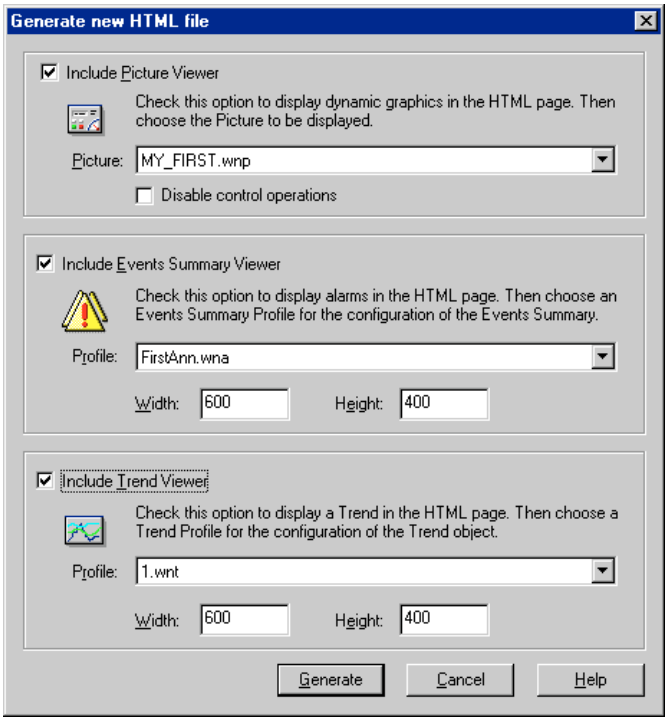
   or,

   Click the **New HTML file** icon in the toolbar. The *Generate new HTML file* dialog is displayed, as shown on the following page.
2. Specify parameters for the Viewers you want to display in the page, as described on the following page.
3. Click **Generate**. The *New File* dialog is displayed.

4. Enter a name for the HTML page and click **Save**. The page is generated. It is saved in the List of HTML files in the Application Studio.
5. Click on the page in the List of HTML files to display it in your browser.

The Generate New HTML File Dialog

In the example below, all three Viewers have been specified:



The following options are available:

Include Picture Viewer	Check to display the dynamic graphic options, as follows: **Picture**: Specifies the Picture that represents graphic display. Click to display list of Picture files and select the required file. **Disable control operations**: Select to disable user control operations.
Include Events Summary Viewer	Check to display the active alarms options, as follows: **Profile**: Specifies the Events Summary Profile that determines alarm display. Click to display a list of Events Summary Profile files and select the required file. **Width**: Specifies the width of the alarm summary wizlet in the page. **Height**: Specifies the height of the alarm summary wizlet in the page.
Include Trend Viewer	Check to display the Trend options, as follows: **Profile**: Specifies the Trend Profile that determines data monitoring. Click to display a drop-down list of Trend Profile files and select the required file. **Width**: Specifies the width of the Viewer wizlet in the page. **Height**: Specifies the height of the Viewer wizlet in the page.

You can manually create HTML files using standard HTML editors, such as FrontPage Express, that is included with Microsoft Internet Explorer 4.0 and Composer, that is included with Microsoft Netscape Communicator.

The following is an example of HTML code for adding a Picture Viewer Wizlet.

```
<APPLET archive="w4ireq200.jar"
        CODE="wizcon/visualizer/Visualizer.class"
        WIDTH=600 HEIGHT=250>
<PARAM NAME = file VALUE = "car.wnp">
<PARAM NAME = filebase VALUE = "pictures">
<PARAM NAME = cabbase VALUE = "wizcon.cab">
</APPLET>
```

Note: Make sure you include the ***"cabbase"*** *parameter to enable support when running within Microsoft Internet Express.*

The *archive="w4ivsl200.jar"* specifies the name of an archive file that contains all the Wizcon for Internet Java classes. By using the archive file, Netscape and other browsers speed up the downloading time of applets. The other way is to load Wizcon for Internet Java classes one by one which takes more time.

Netscape Communicator 4.0 and Internet Explorer 4.0 (with limitation) can load Java applets archived as JAR files – JAR files are compressed as in ZIP files and therefore faster to download.

The JAR format is Java 1.1 standard for packing Java applications and should be supported by all Java 1.1 compliant browsers.

Microsoft Internet Explorer can also load Java applets from CAB files.

An optional *CODEBASE* tag specifies the directory relative to the HTML page, where Wizcon Classes are found (*.jar or wizcon.cab). For example, if Wizcon classes are placed in the *classes* sub-directory under the directory on the HTML page.

In the default case where the classes are in the web application root directory, the *CODEBASE* tag is not needed and should be removed.

Note: The CODEBASE tag is available only when accessed through a web server. This tag is not for local access.

The *file* parameter (*VALUE=”car.wnp”*) specifies the name of the Picture file to be displayed by the Picture Viewer wizlet.

The *filebase* parameter (*VALUE=”pictures”*) specifies the directory where the Picture files are. It is relative to the Web application root directory (the HTML directory).

WIDTH and *HEIGHT* specify the size in pixels the Picture Viewer Wizlet will get in the HTML page.

This is an example of HTML code for adding an Events Summary Wizlet:

<APPLET archive="wizcon.zip"

CODE="wizcon/Events Summary/Events Summary.class"

WIDTH=490 HEIGHT=200>

<**PARAM NAME = file VALUE = "first.wna**">

<PARAM NAME = filebase VALUE = “annprf”>

<PARAM NAME = cabbase VALUE = "wizcon.cab">

</APPLET>

The parameters are similar to the Visualizer Wizlet, with different values.

For a complete reference to all the HyperText Markup Language (HTML) tags and attributes supported in Netscape Navigator see *http://developer.netscape.com/library/documentation/htmlguid/index.htm*

Editing HTML Pages

HTML pages can be edited, as follows:

➤ **To edit an HTML page:**

1. In the All Containers section, click **HTML**. A list of HTML files is displayed in the List of HTML Files.
2. Right-click the required HTML file and select **Edit HTML file** from the popup menu. The file is opened in your default HTML editor.

Importing HTML Files

You can import an HTML file into your current application.

➤ **To import an HTML File:**

1. In the All Containers section, right-click **HTML** and **select Insert HTML file** from the popup menu. The *Import File* dialog is displayed in which you can select an HTML file and click **Open** to import it into the current application.
2. Right-click the required HTML file and select **Delete HTML file** from the popup menu. The file is removed from the application.

Deleting HTML Files

HTML files can be removed from the current application.

➤ **To delete an HTML page:**

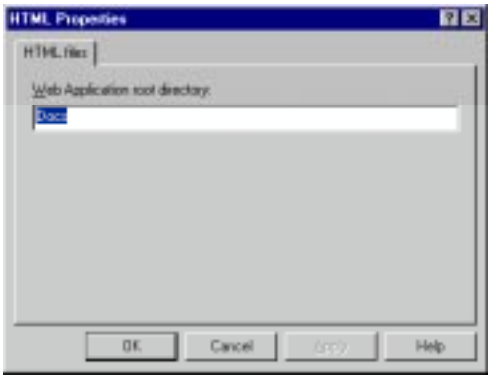
1. In the All Containers section, click **HTML**. A list of HTML files is displayed in the List of HTML Files.
2. Right-click the required HTML file and select **Delete HTML file** from the popup menu. The file is removed from the application.

Changing the Default Location of HTML Files

The web application files that are part of the web application are saved in the Docs folder. You can change this default location, as shown below.

➤ **To change the default location of HTML files:**

In the All Containers section of the Wizcon Application Studio right-click **HTML** and select **Properties** from the popup menu. The *HTML Properties* dialog is displayed in which you can change the displayed location of the web application root directory.



This option can also be accessed in the **General** tab of the *Web Application Properties* dialog, as described on page 15-17.

After generating HTML pages, you can publish them so that a user can interact with the application through the Internet or through an Intranet.

The web application is part of your application that is downloaded to the user web browser. It consists of the HTML files, Pictures files, Events Summary Profile files, Trend Profile files, and Wizcon for Internet Java classes.

To enable users to interact with your application, the web application must be mapped to a web server, this operation is also called *publish*. The web server enables any web browser user to view your application by connecting to your site.

To publish an application you need the following installed on a single computer:

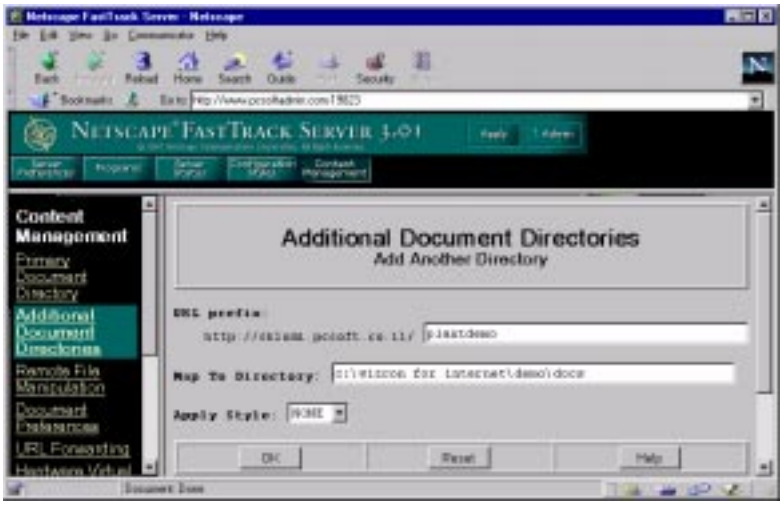
- Windows NT 4.0 or higher
- Web server for Windows NT Microsoft Internet Information Server, that can be downloaded from the Microsoft web site or Netscape FastTrack that can be downloaded at: http://home.netscape.com/try/comprod/mirror/server_download.html or other.
- Properly configured TCP/IP network for LAN, WAN or RAS (Remote Access Service)
- Wizcon for Internet and the required application.

➤ **To publish an application:**

1. Map the Wizcon for Internet web application directory as the primary directory of your web server.
2. Install a Web Server such as the Microsoft Internet Information Server, or the Netscape FastTrack.
3. Add an additional document directory to your web server and map it to your web application directory of your application.

Using Netscape FastTrack

The Netscape FastTrack Server provides the Netscape Server Administration tool application for publishing, as shown below:

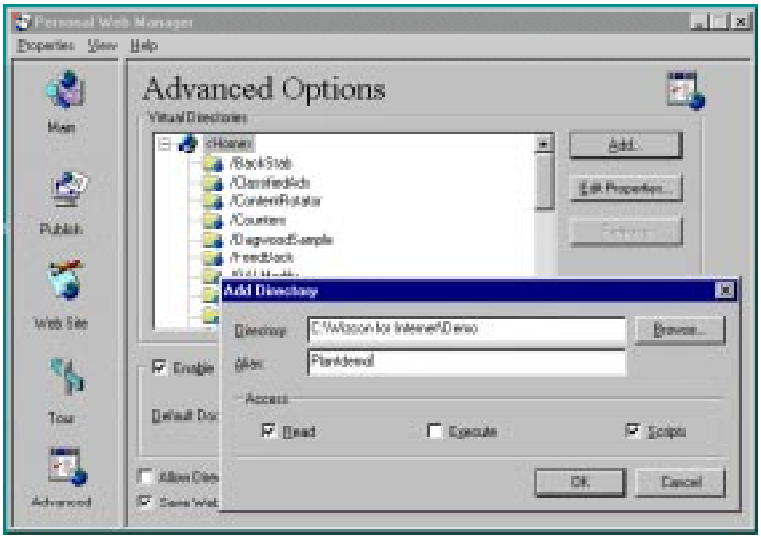


➤ **To publish your web application with the Netscape FastTrack web server:**

1. Select **Content Management** in the menu bar and then **Additional Document Directories**.
2. Enter the URL prefix of the site application in the **URL Prefix** field.
3. Enter the physical directory of your web application in the **Map To Directory** field. This is the Docs directory under your application directory. For example: c:\wizcon for internet\demo\docs.

Using Microsoft Internet Information Server 4.0

The Microsoft Internet Information Server provides the Personal Web Manager for publishing, as shown below:



➤ **To publish your web application with Microsoft Internet Information Service:**

1. Map the physical directory of your application docs to a virtual directory (the URL).
2. Invoke your Personal Web Manager and select **Advanced Options**. The **Virtual Directories** tree appears.
3. Select the folder under which you want to place your application.
4. Connect to the Web Server and check your application. Use the folder you specified to access the web application.

For further information refer to the Windows NT Option Pack Documentation - Microsoft Internet Explorer, Personal Web Manager's online help: *Adding New Publishing Directories*.

Web Application Properties

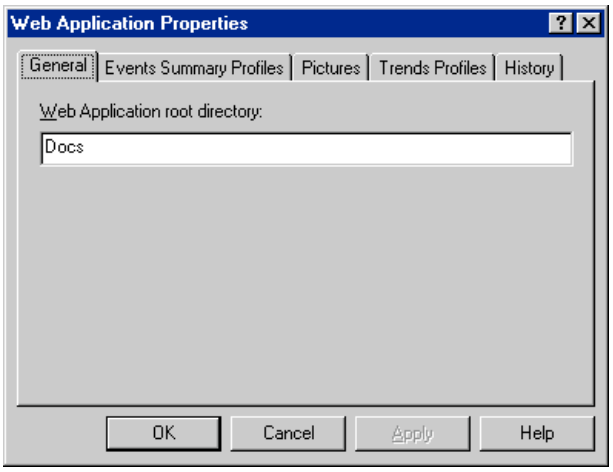
The *Web Application Properties* dialog enables you to change the following:

- Web Application files directory, in the **General** tab, as described on the following page.
- Events Summary Profiles files directory, in the **Events Summary Profiles** tab, as described on page 15-18.
- Pictures file directory, in the **Pictures** tab, as described on page 15-19.
- Trend Profiles file directory, in the **Trends Profiles** tab, as described on page 15-20.
- Cache settings for historical data, in the **History** tab, as described on page 15-21.

Note: The Web application files are saved in the Docs folder. The Events Summary Profile folder, the Picture files folder and the Trend Profile files folder are located by default under the Docs directory.

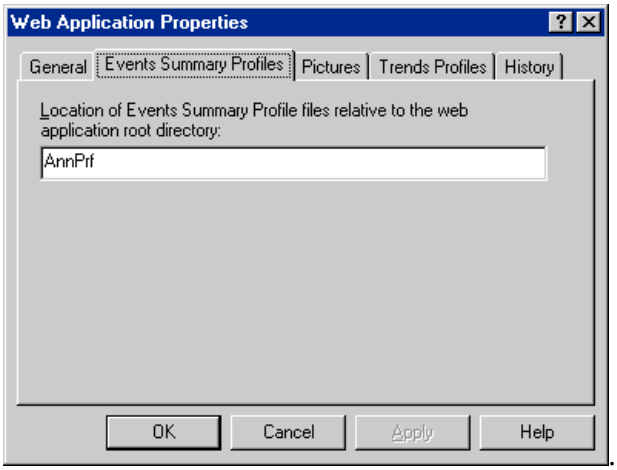
Changing the Location of Web Application Files

The web application files that are part of the web application are saved in the Docs folder. You can change this default location in the **General** tab, as shown below.



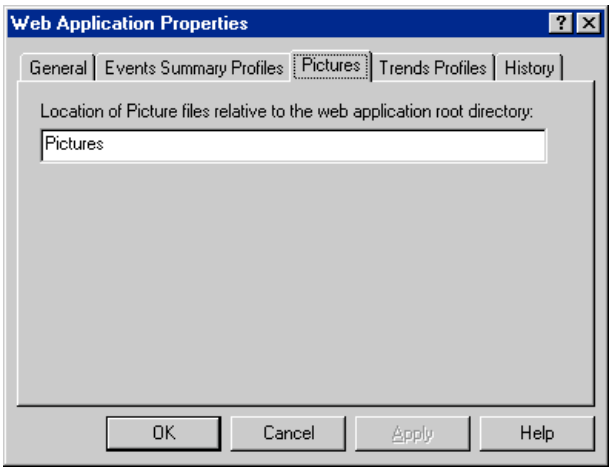
Changing the Location of Events Summary Profile Files

The Events Summary Profile files in the default location called **AnnPrf**. You can change this default location in the **Events Summary Profile** tab, as shown below:



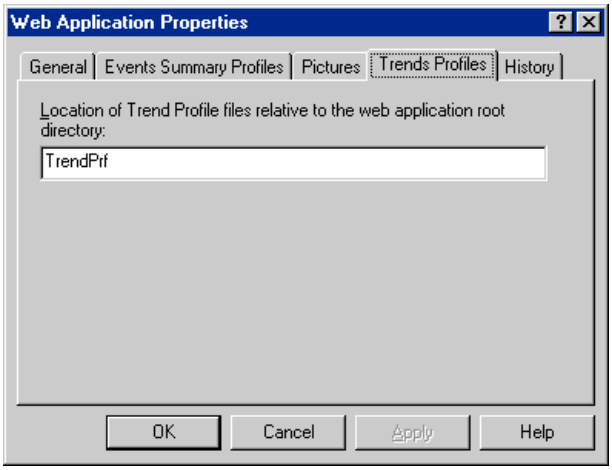
Changing the Location of Picture Files

The Picture files are saved in the default location called **Pictures**. You can change this default location in the **Pictures** tab, as shown below:



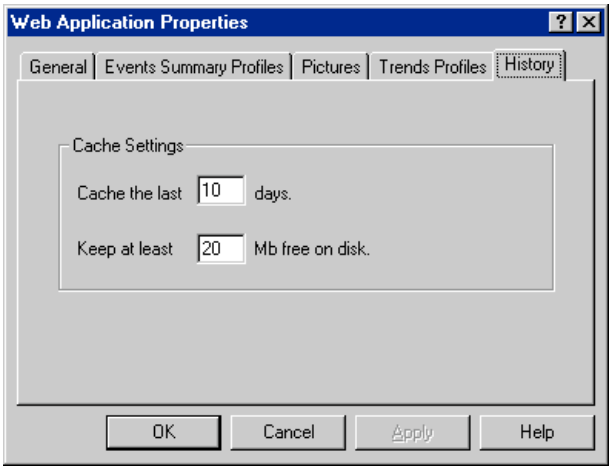
Changing the Location of Trend Profile Files

Trend Profiles files are saved in the default location called **TrendPrf**. You can change this default location in the **Trend Profiles** tab, as shown below:



Specifying Historical Cache Settings

Cached information enables quick access to recently acquired data. The Wizcon system caches up to ten days of data by default and ensures that while doing so, at least 20 Mb of disk space remains free. You can change these default settings in the **History** tab, as shown below:



The following options are available:

Cache the last x days — Specifies the number of runtime days the system will store acquired data.

Keep at least x Mb free on disk — Specifies how many Mb the system keeps free while caching data. If the system detects that there is not enough space to cache the specified number of days, it will cache as many days as there is available space.

Chapter 16
Wizcon Language

About this chapter:

This chapter describes how to define and set-up Wizcon Language for use in the Wizcon system, as follows:

Overview, on the following page, describes an overview of the Wizcon Language.

Basic Principles, on page 16-3, describes the basic principles of Wizcon Language programs and the two stages of language activation.

Language Setup, page 16-5, describes the Wizcon Language setup procedure.

Language Definitions, page 16-7, describes how to define the Wizcon Language.

Wizcon Language Format, page 16-14, describes the basic elements of Wizcon Language statements.

Points to Remember, page 16-44, describes things to remember about the Wizcon language as it relates to alarms, bit-testing, initialization, external programs and tags.

Overview

Wizcon Language is a simple but powerful tool used to create programs that can enhance the capabilities of control equipment working with Wizcon, such as PLCs, and establish the connectivity interface between Wizcon and external computer applications. *Wizcon Language runs on your local PC, it is not supported on the Web.*

A general description of Wizcon Language is provided in the following paragraphs, followed by the Language definition procedure. The Wizcon Language format is provided on page 16-14.

Wizcon Language programs are written as a sequence of statements. These statements consist of two elements:

- **Condition**: A condition based on arithmetic and Boolean expressions using tag values or system variables.
- **Operations**: A set of operations defined by the language, including assigning tag values, issuing alarms, loading images, loading recipes, and generating reports.

Language statements are scanned periodically by the system, as defined during the Wizcon Language setup procedure, described on page 16-5. If a statement condition is true, the relevant operation or operations are executed.

The following are example statements:

```
IF
   @TEMP >= 100
THEN
   @POWER = 0; PRINT$A "Boiling Water at " @TEMP
   Degrees, Power Shut     off"
IF
   @LEVEL <= @MINLEVEL AND @RESERVE <> 0 AND $HOUR =
   12
THEN
   @FEEDRATE = 10; @FEED = 1; PRINT$A "Filling tank
   at rate" @FEEDRATE
```

Note: Since operations are executed as long as the respective conditions are met, the same set of operations can theoretically be executed perpetually. To prevent this from happening, or to cause this to happen, the operator can assign the following parameters:

Disregard	Operations are executed as long as a specified condition is true.
Execute on Change	Operations are executed only once when a condition becomes true.

Each Language statement can include a brief description.

Language Activation

Wizcon Language activation is performed in two stages.

- Statements are defined (the programming stage).
- Language statement scanning and execution parameters are determined.

The remainder of this chapter deals with the statement definition stage only.

Menu ⇨ Design / Wizcon Language / Settings

Wizcon Language is a language program that can be accessed from within the Wizcon application. The language can be used to execute a variety of commands, and will run periodically in the background of the application. Wizcon Language commands can include predefined messages that are issued as the program is executed.

The following is an example of a simple Wizcon Language program that will check if a tag called PRES equals or exceeds a specific pressure level, and if so, will reset a tag called AIR, which will then cause a tag called SPRAY to begin the spraying cycle:

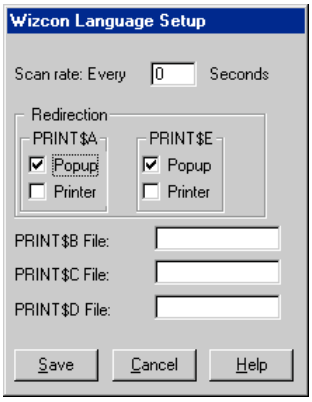
```
IF        @PRES >= @PRESLVL
THEN      RESET @AIR; {SET @SPRAY;}
          PRINT$E "Starting to Spray"
```

The Wizcon Language setup procedure enables you to define how the language will operate when it is invoked.

➤ **To configure Wizcon Language for operation:**

From the *Design* menu of the Wizcon Application Studio, point to **Wizcon Language** and select **Settings** from the pop-up menu.

The *Wizcon Language Setup* dialog appears:



The following options are available:

Scan rate — Specifies the rate at which the Wizcon Language program is executed. Each time the specified period (in seconds) has elapsed, the program is executed once (if the previous pass was completed). A value of zero indicates that the Wizcon Language program will not be executed at all.

Redirection — Redirects messages to specific destinations. The following PRINT$ commands are available:

PRINT$A and **PRINT$E**: Redirect messages to **Popup** for the Popup Event Summary, or to **Printer** for the alarm printer.

PRINT$B, **PRINT$C** and **PRINT$D**: Redirect messages to the file specified.

Note: To verify the rate of the Wizcon Language, a print$ command with the current time can be placed in the program. For example,

```
PRINT$E "Start scan at " $TIME
```

Menu ⇨ Design / Wizcon Language / Definition

The following section describes how to create Wizcon Language definitions that will be used by the system. This involves two steps:

- Opening the Wizcon Language dialog in which statements are defined, as described below.
- Defining statements, as described on page 16-9.

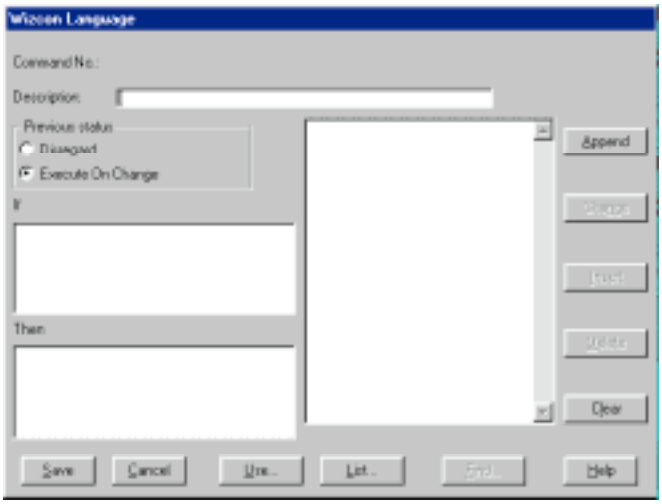
➤ **To open the Wizcon Language dialog:**

In the Control Panel of the Wizcon Application Studio, double-click the **Wizcon Language** icon.

or,

From the *Design* menu of the Wizcon Application Studio, point to **Wizcon Language** and select **Definition** from the pop-up menu.

The *Wizcon Language* dialog appears:



The following options are available:

Command No.	Specifies sequential statement numbering. The statements are numbered automatically as they are defined and modified.
Description	Specifies a description of the statement. Statements are only identified by their description.
Previous status	The following options are available: **Disregard**: indicates that the commands will be executed as long as the condition persists. **Execute on Change**: indicates that the commands will be executed only once when the condition changes from false to true.
If	Specifies a condition expression.
Then	Specifies operations, each separated by a semicolon. **If** and **Then** conditions are described in more detail on page 16-10.
Append	Adds the statement to the statement list in the dialog.
Change	Edits a statement definition. Select the statement and make the required changes before activating.
Insert	Inserts a statement into the statement list after the currently selected statement.
Delete	Deletes the selected statement.
Clear	Removes the definitions of the selected statement.
Use	Loads a selected file from a list, as described on page 16-11.

List	Loads a specific file from the statement list to the printer, or to a file, as described on page 16-12.
Find	Finds specific text in If/Then statements and description sections of a program, as described on page 16-13.

Statement Definition

You can define statements in the definition fields, the **Description**, **Previous status**, **If** and **Then** fields of the *Wizcon Language* dialog as described below and select the statement execution method. (Refer to page 16-7 to see how to access the dialog).

Once a statement is defined, it can be appended to the end of the program by activating the **Append** button. The statement numbers are automatically adjusted.

- To select a statement in the program:

  Click on the statement. The statement is highlighted. Its definition appears in the **Definition Fields** for editing.

- To define a new statement:

  Click on a blank statement. The **Definition Fields** is cleared, enabling a new statement to be defined.

  When a statement is selected, its position in the program will be marked so that new statements can be inserted in its place.

- To edit a statement in a program:

  Select the statement, make the desired changes in the **Definition Fields**, and activate the **Change** button. The edited version of the statement is entered in place of the original version.

  To clear any statement, activate the **Clear** button.

- To insert a pre-defined statement at any location:

  Select the statement before which the pre-defined statement is to be inserted and activate the **Insert** button.

- To delete any statement in a program:

  Select the statement and activate the **Delete** button.

If/Then

If/Then statements consist of two elements, **Conditions** and **Operations**.

- **Conditions** contain expressions that yield the value True (non-zero) or False (zero).
- **Operations** can contain several commands, each separated by a semicolon. No line breaks are necessary between commands.

  If an expression in a **Condition** yields a True value, the commands in the relevant **Operation** are executed.

  If the expression is False, the commands are ignored and the program proceeds to the next statement.

Note: The Conditions element may be empty, causing the Operations to be executed in any case.

Examples

```
IF ($HOUR = 18) AND @DONE
THEN RLOAD "NIGHT.1"
IF @LEVEL >= @SETP
THEN RESET @PUMP;
SET @MIXER;
PRINT$E “mixer start”
```

Comments can be inserted in statements, but will be ignored upon program execution. Comments are typed in curly brackets {}.

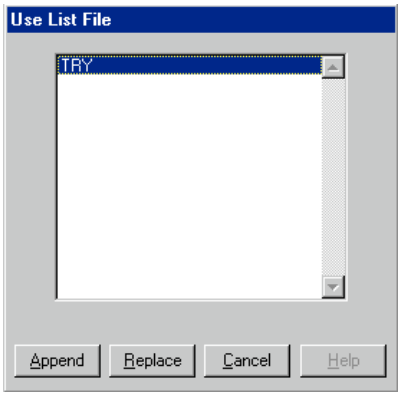
Example: IF @LEVEL >= @SETP

THEN RESET @PUMP; { SET @MIXER; }

PRINT$E "Starting Mixing"

Loading a File from the Statement List

Activate the **Use** button in the *Wizcon Language* dialog shown on page 16-7, to load a selected file from the list. The *Use List File* dialog is displayed:



The following options are available:

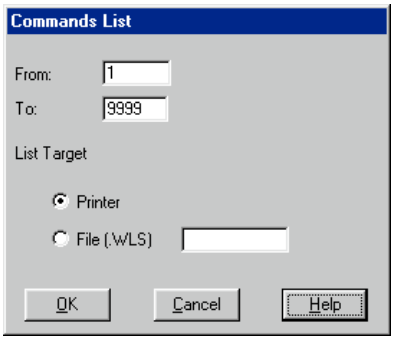
Append Appends the selected list commands to the end of the command list located in the **If/Then** fields of the *Wizcon Language* dialog.

Replace Replaces the existing commands with the list of commands available in the defined WLS file.

Cancel Exits the dialog.

Loading a Statement File to a Printer or a File

Activate the **List** button in the *Wizcon Language* dialog, shown on page 16-7, to load a specific file from the statement list to a printer or to a file. The *Commands List* dialog is displayed:



The following options are available:

From — Specifies the number of the statement from which the printing is to begin.

To — Specifies the number of the last statement to be printed.

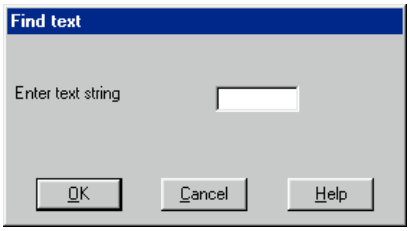
List Target — Sends the program to the printer or a file:

Printer: Sends the program to the printer.

File (.WLS): Sends the statements to a file. Specify the name of the file to which you want the statements sent.

Finding Text

Activate the **Find** button in the *Wizcon Language* dialog, shown on page 16-7, to find specific text in **If/Then** statements and description sections of a program. The *Find text* dialog is displayed:



Enter a text string and click **OK**. The search will begin from the statement you select and proceed down to the end of the program. When the string is found, the screen is scrolled to the statement that contains the string.

Wizcon Language is a simple procedural language in which statements are written sequentially. Wizcon Language statements consist of the following basic elements:

- **Variables**: Tag or system values, as described below.
- **Operators**: Arithmetic or Boolean symbols, that together with variables and constants, constitute expressions, as described on page 16-17.
- **Expressions**: Combinations of variables, constant, and operators that yield values, as described on page 16-20.
- **Commands**: Symbols that represent operations, as described on page 16-22.
- **Constants**: Any positive numerical value.

Variables

There are two kinds of variables:

- **Tags**: A tag is represented by its name, preceded by a commercial-at sign (@). For example, @POWER, or @INFLOW.

  To indicate the Wizcon network station a tag belongs to, after the commercial-at sign, simply type the station name followed by a colon (:), and then the name of the tag. For example: **@STATION1:ANA01** refers to a tag called ANA01 in the station called STATION1.

- **System Variable**: A variable controlled by the Wizcon system. This type of variable is represented by a name preceded with a dollar sign ($), such as $TIME, or $DATE.

  System variables are read-only, and cannot be modified.

The table below describes the Wizcon system variables:

Name	Range	Description
$ALARMS	-	Represents the number of unacknowledged alarms in the system.
$TIME	00.00 - 23.59	Specifies the current time in Hours.Minutes format. When printed, the time will appear in the format Hours.Minutes.Seconds.
$DATE	01.01 - 31.12	Specifies the current date in Day.Month format. When printed, the date appears in the format Day.Month.Year.
$HOUR	0 - 23	Specifies the current hour.
$MINUTE	0 - 59	Specifies the current minute.
$SECOND	0 - 59	Specifies the current second.
$DAY	1 - 31	Specifies the current day.
$MONTH	1 - 12	Specifies the current month.
$YEAR	0 - 99	Specifies the current year.
$WEEKDAY	0 - 6	Specifies the current day, where 0 is Sunday and 6 is Saturday.

Name	Range	Description
$NEWMIN	0 - 1	This variable is set to 1 each time the program is executed after one minute. Afterwards it reverts to 0.
$NEWHOUR	0 - 1	This variable is set to 1 each time the program is executed after one hour. Afterwards, it reverts to 0.
$NEWDAY	0 - 1	This variable is set to 1 each time the program is executed after 24 hours. Afterwards, it reverts to 0.
$OPERATOR	String	Specifies the current operator name.
$GROUP	Bitmask	Represents the groups associated with the current operator.
$DISKFULL	0 - 100	Specifies the percentage of disk space used.
$INTIME	1 - 1439	Specifies the minutes passed since midnight. This value is used for tag comparison and definition.
$INDATE	0 - ?	Specifies the days passed since January 1, 1980. This value is also used for tag comparison and definition.

Name	Range	Description
$BACKUP	0-1	Represents the status of the backup station. When variable is set to 1 - the system is in passive mode. When set to 0 - system is in active Backup station or a non-backup station. *Caution: Do not assign $BACKUP to a tag. This variable is intended for stations*.

Expression Operators

Several types of operators can be used on variables and constants to form expressions.

The operators that can be used include arithmetic, trigonometric, Boolean, and others listed on the following page. Each operator is assigned a priority value to enable the system to determine which operator should be calculated first when an expression includes several operators.

The operators, their priority levels, and brief descriptions of each are provided in the following table.

Note: Although the use of parentheses in expressions is optional, it is recommended to use them whenever the priority of calculation execution is in doubt. If an expression does not include parentheses, mathematical and logical calculations will be executed according to the order shown in the chart above.

Priority Level	Operator	Description
1	(,)	Open and close parentheses.
2	SIN, COS	Sine and Cosine, in radians.
	FLOOR	“Rounds off" downward. Thus, FLOOR 8.75 = 8.
	SIGN	Value's sign (returns 1, -1, or 0).
	ABS	Absolute value.
	LOG	Logarithm, base 10.
	LN	Natural logarithm/.
	DAYOF	Extracts day from date value.
	MONTHOF	Extracts month from date value.
	YEAROF	Extracts year from date value.
3	~	Bitwise NOT.
	BIT	Extracts the value of a given bit in an analog tag. @TAG BIT 1 would return the value of the first bit on the right for a tag called TAG.
4	^	Power (e.g., @TAG ^ 2).
5	*, /	Multiplication and division.
	%	Remainder (e.g., 5%2 = 1).

Priority Level	Operator	Description
6	+, - MIN, MAX	Addition and subtraction Compare two values, return the larger and the smaller, respectively (e.g., 1 MIN 3 returns 1).
7	<<, >>	Bitwise Shift Left and Shift Right. The value of each bit is moved to the left or right, by number of places specified (e.g., @TAG >> 3 moves each bit value 3 places right). The bits at the end are dropped, and the new bits receive the value 0.
8	&	Bitwise AND
9	| BXOR	Bitwise OR Bitwise XOR (e.g., 3 BXOR 5 returns 6)
10	= ><, <> >, < >=, <=	Equality Inequality Greater and lesser than Greater/lesser or equal
11	NOT	Boolean NOT
12	AND	Boolean AND
13	OR	Boolean OR

For tags defined in the **Tag Definition** module as string tags, only the following expression operators can be used:

(,)	Open and close parentheses
=	Equality (comparison or assignment)
><, <>	Inequality
NOT	Boolean NOT
AND	Boolean AND
OR	Boolean OR

Expressions

Expressions are formed by combining constants, variables and operators. However, any single variable or constant can also be considered an expression.

In expressions, any operator in parentheses will be calculated first.

For Boolean operators, the value 0 is considered **False** and the value 1 (or any non-zero value) is considered **True**.

Negative values can be included in expressions by subtracting from zero. However, only positive constants are allowed.

Examples

@KILOS * 1000 + @GRAMS	Returns total in grams
(@TEMP1 + @TEMP2) / 2	Returns tag average
@FLAG OR NOT @FLAG	Returns 1 (True)
$WEEKDAY > 7	Returns 0 (False)
(60 MAX $MINUTE) + 1 = 61	Returns 1 (True)
0 - 100	Returns -100
0 - @VOLTAGE	Returns inverted value of VOLTAGE.

Remember

- Division by zero returns a value of 0.
- Bit operations, such as shifts and Boolean bit operators, take unsigned integers. If any other value is encountered, it is converted to a positive integer, which may cause unpredictable results.
- Only the following operators can be used for string tags: (,), =, ><, <>, NOT, AND, and OR.

Commands

Commands are symbols that represent operations. Some commands may require arguments. Wizcon Language commands, examples of each command, and brief descriptions of each, are provided in the following table.

Command	Example	Description
ASSIGN	@tag1=130 @tag1=2*@tag2 @tag1=(@tag2=2)	Assigns a value to a tag.
INC	INC @tag1	Adds 1 to tag value.
DEC	DEC @tag1	Subtracts 1 from tag value.
SET	SET @tag1	Assigns a tag value of 1.
RESET	RESET @tag1	Assigns a tag value of 0.
SETBIT	SETBIT @ANA01 3	Sets a specific bit in a tag.
RESETBIT	RESETBIT @ANA01 2	Resets a specific bit in a tag.
RSAVE	RSAVE "recipe.001" RSAVE "recipe." @tag	Saves a recipe.
RLOAD	RLOAD "recipe.001" RLOAD "recipe." @tag	Loads a recipe.

Command	Example	Description
PRINT$A	PRINT$A "Danger! Temp=" @temp	Writes alarm message to pop-up, Event Summary and file.
PRINT$G	PRINT$G "Final Temp was: " @temp	Writes alarm message to Event Summary and file.
PRINT$F	PRINT$F "Sensor A is ON"	Writes alarm message that does not have to be acknowledged.
PRINT$B,C,D	PRINT$B "Total weight was: " @kgs	Outputs a message to file you specified in the Wizcon Language setup.
PRINT$E	PRINT$E "Have a nice day!"	Displays a pop-up message.
SHELL	SHELL "command" @tag	Executes a command from the operating system environment. A tag name can be used for transfer of values to external programs.
CHART	CHART “TREND3”	Loads a chart with several optional parameters.
REPORT	REPORT "rep1"	Generates a report according to a format defined in the Report module.
EXIST	IF EXIST “recipe.001” THEN RLOAD “recipe.001”	Checks if a file exists.

Command	Example	Description
UNITERR	UNITERR 1.002	Checks if a communication driver and device are operational.
MACRO	MACRO “MyMacro”	Activates a pre-defined macro.
ZONE	ZONE “MAIN.3”	Loads an image window and goes to a specified zone.
@!tagname	@!tag1	Forces an immediate tag read.

Strings

Many commands accept string arguments. The string argument is a list of characters placed between double-quotes. For example, `"This is a string."`

Consecutive strings are concatenated to form a single string, such as `"This is" "one long string."`

Variables can be placed between strings. In such cases, the resultant string will include the value of the variable.

For example, `"Production on" $DATE "was" @PROD "tons."` This string would yield the following statement: **`Production on 11.12.90 was 7.24 tons`** (depending, of course, on what the value of `@PROD` is).

String Tags

Only the following commands can be used for tags that were defined as string tags in the Wizcon tag definition module:

ASSIGN
RSAVE
RLOAD
PRINT$A,B,C,D,E,F,G
SHELL
REPORT
EXIST
MACRO
ZONE
CHART
@!TAGNAME

Each Wizcon Language command is described in the following paragraphs.

Assign Commands

Assign commands force new values on tag variables (only if those variables can be changed).

The basic assign command is the equals (=) sign. The tag is placed to the left of the sign; the assigned expression is placed to the right.

Examples

`@TAG1 = @TAG2`	`TAG1` is assigned to the value of `TAG2`.
`@SUM = FLOOR (@SUM + 0.5)`	`SUM` is assigned the rounded value of its current value.
`@STOP = (@TEMP = @MAX)`	`STOP` is assigned the value True (1) if TEMP is equal to Max and False (0) otherwise. Note that the same = symbol is used for both a command and a logical operator.
`@LEVEL = 0 - 10`	`LEVEL` is assigned the value -10.
`@SPEED = 0 - @SPEED`	`SPEED` is assigned the opposite of its current value.

Some control assignment operations have special commands. These operations include:

`INC`	Increment a tag. Example: `INC @TAG`, which is equivalent to `@TAG = @TAG + 1`
`DEC`	Decrement a tag. Example: `DEC @TAG`, which is equivalent to `@TAG = @TAG - 1`
`SET`	Sets a tag to 1. Example: `SET @TAG`, which is equivalent to `@TAG = 1`
`RESET`	Sets a tag to 0. Example: `RESET @TAG`, which is equivalent to `@TAG = 0`
`SETBIT`	Sets a bit in a tag to 1. Example: `SET @TAG 3`, which sets bit `3` in `TAG`
`RESETBIT`	Resets a bit in a tag to 0. Example: `RESETBIT @TAG 3`, which resets bit `3` in `TAG`

Messages can be sent to various destinations using the PRINT command.

The basic PRINT syntax is

PRINT*dest string*

where *dest* is a destination indicator and *string* is a string argument with several changes (explained below).

The destination indicator is a letter preceded by the dollar sign ($), which indicates the destination of the string.

A string can be sent to any of the following destinations:

$A	The string is recorded and sent as an alarm to the pop-up, Event Summary, the printer, or both, depending on how it was defined in the Wizcon Language Setup.
$F	The string is recorded and sent as an Acknowledged alarm to the pop-up Event Summary, the printer, or both, depending on how it was defined for the $A indicator in the Wizcon Language setup.
$E	The string is sent to the pop-up Event Summary, the printer, or both, depending on how it was defined in *the Wizcon Language Setup* dialog, as shown on page 16-6. However, it will not be recorded as an alarm. This is useful when immediate notification is required, but the information does not have to be recorded and processed.
$G	The string is recorded as an alarm, but not sent to the pop-up, Event Summary or printer.
$B	The string is sent to a file specified in the Wizcon Language setup.
$C	Same as $B (but can be a different file for saving).
$D	Same as $B (but can be a different file for saving).

The pop-up Event Summary is described in more detail in *Chapter 9, Events Summaries*.

Several destination indicators can be specified for one PRINT command, so that the string will be sent to all the indicator destinations.

Examples

```
PRINT$A "Oven is too hot!" @TEMP "Degrees"
```

This message will be issued as an alarm.

```
PRINT$C "Balance for batch" @BATCH "at" @WEIGHT
"Kilos"
```

This message will be sent to a file.

```
PRINT$A$B "Oven is too hot!" @TEMP "Degrees"
```

This message will be issued as an alarm and sent to a file.

Using the file destinations ($B, $C, $D), on-line information can be saved and used later by other applications, such as spreadsheets, databases, and report generators.

Line Feed Control

The special control code |NN placed at the beginning of a string, suppresses the Carriage Return or Line Feed code at the end of the message. Thus, consecutive PRINT commands will form single lines.

Note: This code applies only to the PRINT$B, PRINT$C, and PRINT$D commands.

Example

```
PRINT$D "|NN Temperature is dangerously high!"
PRINT$D "Alarm operators!"
```

This message will be written as:

```
Temperature is dangerously high!. Alarm operators!
```

Recipe Commands

A Recipe is a list of tags and their respective values. Recipes are described in more detail in *Chapter17, Recipes*.

The Wizcon Language includes commands that can be used to capture and apply recipes. These commands are useful when the operator wants the system to automatically apply set values to large groups of tags, or automatically record current settings for later use.

Models are groups of recipes, and each recipe is stored in a file called `model.rec`, where `model` stands for the model name and `rec` stands for the recipe name. Thus, the recipe `OUT` belonging to the model `MOTION` is stored in the file called `MOTION.OUT`.

The recipe command syntax is:

RLOAD *recipe*	To apply a recipe
RSAVE *recipe*	To capture a recipe

where *recipe* is a string specifying the recipe filename. If only the filename is specified without a pathname, the recipe will be placed in the default pathname for recipes, as explained in the *Changing Default File Paths* section in *Chapter 5, Getting to Know the Application Studio*. If a full pathname is specified for the recipe, the default will be overridden.

Examples

`RLOAD "MOTION.OUT"`	Apply recipe `OUT` of model `MOTION` from the default recipe directory.
`RLOAD "D:\DYES\COLOR.RED"`	Apply Recipe `RED` of model `COLOR` from the `\DYES` directory in drive `D`.
`RSAVE "TUNE.008"`	Capture the current process setting into recipe `008`, according to model `TUNE`.
`RLOAD "DAILY." $DAY`	Apply a recipe according to the current day (`DAILY.0` for Sunday, `DAILY.1` for Monday, etc.).
`RSAVE "MIXER." @MODE`	Capture the current process setting into a recipe identified by the value of `MODE`, according to the model `MIXER`. For instance, if `MODE` is 12, then recipe 12 will be generated and stored as file `MIXER.12`.
`RLOAD @RCP1`	Apply the recipe represented by the string tag called `RCP1`. Note that `RCP1` **must** be a string tag and its value **must** be a valid recipe for the operation to be executed.

When a recipe is applied or captured, an alarm will automatically be issued. The destination of the alarm is determined by the `PRINT$A` command (as explained above), and its status is **Acknowledged** and **Ended**.

SHELL Command

While Wizcon Language commands and statements are being executed, operating system batch programs can also be called and executed.

The command syntax is

```
SHELL "command"
```

where *command* is a string containing any operating system command.

Examples

```
SHELL "COPY RECIPE.001 RECIPE.002"
```

This command will copy file `RECIPE.001` to `RECIPE.002`.

```
SHELL "COPY DATA." @COUNT " DATA.NEW"
```

If the tag called `COUNT` is 15, file `DATA.15` will be copied to `DATA.NEW`.

```
SHELL "START MYPROG"
```

This command will execute a program called `MYPROG`.

Note: Wizcon functions can be expanded by writing add-on program, using the WizPro kernel. Information about add-on programs is provided in the WizPro Online Reference.

Chart Command

The CHART command can be used to load a chart, with several optional parameters. The following CHART command formats can be used:

Default Chart

The format of the default chart command is:

```
CHART  "VpName"
```

This command loads the specified chart window as is. The time definition will not be changed.

Absolute Time

The format of the absolute time chart command is:

```
CHART "VpName ABS I_Date I_Time [D_Len]
[T_Len]"
```

This command loads the specified chart window and changes its time parameters in the absolute mode, where:

I_Date	The number of days from 01/01/80.
I_Time	The number of minutes since midnight.
D_Len	Chart and window period, in days. This parameter is optional (see notes on next page).
T_Len	Chart and window period, in minutes. This parameter is optional (see notes below).

In the absolute mode, you can specify date and time parameters to change tag values, via image time and digital date displays.

Relative Time

The format of the relative time chart command is:

```
CHART "VpName REL D_Date D_TIME [D_Len]
[T_Len]"
```

This command loads the specified chart window and changes its time parameters in the relative mode, where:

D_Date	The number of days back from the current day.
D_Time	The number of minutes back from the current minute.
D_Len	Chart and window period, in days. This parameter is optional (see notes on next page).
T_Len	Chart and window period, in minutes. This parameter is optional (see notes on next page).

In the relative mode, you can define the numbers of days ago as a simple digital display, and the number of minutes ago as a digital time display.

The format of the relative date chart command is:

```
CHART "VpName RELDATE D_Date [I_TIME] [D_Len]
[T_Len]"
```

This command loads the specified chart window and changes its time parameters in the relative date mode, where:

D_Date	The number of days back from the current day.
I_Time	The number of minutes since midnight. This parameter is optional. If not specified, the default definition will be used.
D_Len	Chart and window period, in days. This parameter is optional (see notes below).
T_Len	Chart and window period, in minutes. This parameter is optional (see notes below).

In the relative date mode, you can define the numbers of days ago as a simple digital display, and the time when the chart will begin.

Note:

- For all modes, if the window is not loaded, the CHART command will first load the window and then change the definitions. If the window is already loaded, the command will only change its definitions.
- The CHART command can change time parameters only for historical charts.

Examples

```
CHART “PROCESS ABS  “ @IDATE  “  “ @ITIME
```

This command loads the PROCESS chart window in the absolute mode and sets time and date parameters according to IDATE and ITIME tags. The values for these tags can be assigned using WIL2 instructions or Date/Time triggers in an image.

```
CHART “TEMP RELDATE  1  ” @ITIME
```

This command loads the TEMP chart in RELDATE mode, and sets the date for yesterday and the time according to the @ITIME tag.

Report Command

This command enables the automatic generation of a report according to a format that has been created previously in the **Report** module.

Note: The REPORT command cannot be used to edit any report that was not created using the Wizcon Report module.

The short format of the command is:

```
REPORT "xxxxx"
```

where **xxxxx** is a report name of up to 5 characters.

Note that the REPORT command must be the last command in the Execute section, and therefore cannot appear together with an RLOAD or SHELL command.

Tag names can be included in the REPORT command as variables. This can be useful to generate a series of reports with a single command.

For example, if you want to generate ten reports, REP0 to REP9, you would define a dummy tag called repno, and write the following command sequence:

```
IF     @repno > 0
THEN   @repno = @repno - 1;
REPORT "REP" @repno
```

One way the series could be activated is by pressing a function key defined with the value of 20.

For example,

```
IF     @TAG1 = 20
THEN   @repno = 0
```

The full format of the REPORT command, with optional report variables, is:

```
REPORT "xxxxx rd rt st et of sd ed dir tag"
```

where:

RD sets the reference date. 0 is the current day, 7 is the previous week.

RT is the reference time, used by Time type fields. This is the number of minutes that elapsed since midnight, between 0 and 1,439. Thus, 8 AM would be 480.

ST and **ET** are Start Time and End Time, and are only for the time in Tag type fields for which you selected the **Given at Run Time** option. Specify the number of minutes that elapsed since midnight.

OF is for Output File. Specify the filename or device to which the report will be sent.

SD and **ED** stand for Start Date and End Date respectively, and are used with Tag type fields for which you selected the **Given at Run Time** option. These parameters are optional.

DIR (Directory) specifies the directory in which your history files are located.

TAG specifies the exact name of a tag (for example, ANA01 and not @ANA01). The tag will be reset (tag=0) when the report begins, and set (tag=1) when the report ends. Thus, you will be notified when the report is completed.

Examples

The following is a list of examples of how you would use the **Report** command.

- REPORT "REP4 2 360 0 360 LPT2"

  This command would create a report in a format defined as REP4, with a reference date of 2 days before, a reference time of 6 AM, midnight as the default start time for tag fields, 6 AM as the default end time, and the report would be output to printer 2.

- Example 2

  If you want to leave optional variables empty, type an **x** at their location in the REPORT command. Wizcon will use the default value 0 for all the variables except **OF** (Output File), for which the default is LPT1. If you want the report to be sent to the printer, do not type anything (typing **x** would cause the report to be sent to a file called **x**).

  For example, the command

  REPORT "REP1 x x x x REP1.LST"

  would generate a report in the format defined as REP1, and output that report to a file called REP1.LST.

- Example 3

  You can use the REPORT command to generate a report about the duration of a specific batch program. The program start time is stored in a PLC register, which may, for example, be represented in Wizcon as the tag called **Start**. When the batch is terminated, the value 1 will be assigned to a bit in the PLC. This bit may, for example, be a digital tag in Wizcon called **Batchend**.

  The command would be written as follows:

```
IF        @BATCHEND = 1
THEN      REPORT "BATCH x x " @start
```

  Tag names can be included for variable values. Note that parameters must be separated by spaces.

- Example 4

  The variables SD and ED are useful to help process weekly and monthly reports, and in calculating an accumulative average.

  For example:

```
IF$       TIME = 17.00
THEN      @S_DATE = $DAY - 1; $E_DATE = 0;
REPORT "REP1 X X X X LPT1 " @S_DATE " " @E_DATE
```

File Check Command

The **Exist** command can be used to check if a file exists. If the file you specify exists, the command will return 1. If the file does not exist, the command will return 0.

For example:

```
IF EXIST “MAIN.IMG”
THEN SHELL “COPY MAIN.IMG DETAIL.IMG”
```

Note: You can also use string tags to represent the file you want to search for.

For example:

```
IF EXIST @IMG
THEN SHELL "START MYPROG"
```

In this example, @IMG can be a string tag that contains the value of a valid filename.

Communication Error Verification Command

The UNITERR command can be used to check if a specified communication driver and device are operational. The format of this command is:

```
UNITERR n.nnn
```

Where *n* is the communication driver number, and *nnn* is the device number.

For example:

```
UNITERR 1.002
```

This command will check if communication driver number 1 and device number 2 are operational (not in communication error).

In case a communication error is detected, the return value will be 1 (0 if communication exists).

Note: Three digits must be specified for the unit number.

Macro Command

The **Macro** command can be used to activate a macro (pre-defined in the **Wizcon Macro Definition** module). The format of this command is:

```
MACRO "MacroName"
```

or

```
MACRO StringTag
```

Where **StringTag** is the name of a string tag that contains the value of a valid macro name.

Examples

```
MACRO "MyMacro"
```

This command will activate a macro called MyMacro.

```
MACRO @MAC
```

This command will activate the macro represented by the value of the tag called MAC.

Zone Command

The **Zone** command can be used to load an image window and go to a specified zone. If the specified image is already loaded, only the Go To Zone operation will be performed. The format of this command is:

```
ZONE "VpName.ZoneName"
```

or

```
ZONE StringTag
```

Where **StringTag** is the name of a string tag that contains the value of a valid zone name.

Examples

```
ZONE "MAIN.PUMP4"
```

This command will cause a move to the zone called PUMP4 in the image called MAIN.

```
ZONE @ZON
```

This command will cause a move to the zone represented by the value of the tag called ZON.

Tag Sampling Command

Tags are sampled periodically, as described in *Chapter 7, Tags*. However, sometimes it may be necessary to spontaneously sample and record the current values of external elements. For example, in some batch programs, tags must be sampled and recorded in synchronization with events, such as when a value has stabilized.

In the Wizcon Language, the sample symbol is an exclamation mark (!) which is attached to the name of the tag to be sampled.

Examples

```
@TOTAL = @TOTAL + @!WEIGHT
PRINT$A "Mixture is ready with volume" @!VOLUME
```

Statements

Statements consist of two elements, Conditions and Operations.

Conditions contain expressions that yield the value True (non-zero) or False (zero).

Operations can contain several commands, each separated by a semicolon. No line breaks are necessary between commands.

If an expression in a Condition yields a True value, the commands in the relevant Operation are executed. If the expression is false, the commands are ignored and the program proceeds to the next statement.

Note: The Conditions element may be empty, causing the Operations to be executed in any case.

Examples

```
IF      ($HOUR = 18) AND @DONE
THEN    RLOAD "NIGHT.1"
IF      @LEVEL >= @SETP
THEN    RESET @PUMP; SET @MIXER;
        PRINT$E "Starting Mixing"
```

Comments

Comments can be inserted in statements, but will be ignored upon program execution. Comments are typed in curly brackets {}.

Example

```
IF      @LEVEL >= @SETP
THEN    RESET @PUMP; { SET @MIXER; }
        PRINT$E "Starting Mixing"
```

Statement Groups

Several statements can be grouped together in a single condition. When the condition is True, the statements will be executed. If the statement is False, the entire group will be ignored, including all its conditions and commands.

Groups are placed between `BEGIN` and `END` directives, which serve as grouping elements only.

The `BEGIN` directive must be the first element in a group of statements and the `END` directive must be the last element.

Example

```
IF        $NEWHOUR
THEN      BEGIN;
          SET @STORE; SET @MOVE
IF
THEN      RSAVE "PROD."$HOUR
          SHELL "FILETRAN PROD."$HOUR
IF        @COUNT < @CMIN
THEN      PRINT$A "Count too small: "@COUNT
IF        @COUNT > @CMAX
THEN      PRINT$A "Count too large: "@COUNT;
          END
```

In the example above, the statements will be executed only at the beginning of each hour.

Note: The second statement has an empty Condition and is executed only when the entire statement group is executed.

Statement groups can be *nested*. This means that a group can be included as part of another group.

Example

```
IF        $NEWHOUR
THEN      BEGIN;
          SET @STORE; SET @MOVE;
          @TOTAL = @TOTAL + @!COUNT
IF
THEN      RSAVE "PROD."$HOUR
          SHELL "SENDFILE PROD."$HOUR
IF        @CHANGE
THEN      BEGIN;
          SHELL "GETFILE ORDER.NEW"
IF
THEN      RLOAD "ORDER.NEW"
```

```
IF        @PASS
THEN      RESET @WAIT;
          SET @GO;
          END
IF        @COUNT < @CMIN
THEN      PRINT$A "Count too small: "@COUNT
IF        @COUNT > @CMAX
THEN      PRINT$A "Count too large: "@COUNT;
          END
```

Points to Remember

The following are points to remember about Wizcon language as it relates to alarms, bit-testing, initialization, external programs and tags.

Alarms

Commands can be written in the Wizcon Language to issue alarms. However, if alarms that announce flag status or setpoint violations are required, it is recommended to define these alarms according to the instructions provided in *Chapter 8, Alarms*.

Alarms issued as a result of Wizcon Language commands are specified as follows:

Name	WIZWIL
Severity	10
Class	None
Zone	0

Bit Testing

In order to reduce the number of tags under Wizcon control, and thereby reduce communications and processing loads, several discrete flags (bits) can be grouped into a single analog tag (if the external device supports this grouping).

Several bit-wise operators, such as >>, &, |, BXOR, and BIT can be used to isolate and test analog tag bits.

For example,

```
IF      ((@STATUS1 | @STATUS2) BIT 3) AND @POWER BIT 5
THEN    PRINT$A "Conveyor motor stuck"
```

Such bit-oriented analog tags can be displayed as Drum tags, as explained in *Chapter 12, Image Editor*.

Initialization

Sometimes, an application may need to perform several operations upon startup.

In order for the system to be able to identify a startup operation, specified by a Wizcon Language program, Dummy tags are automatically initialized to 0. For more details about Tags, refer to *Chapter 7, Tags*.

For example,

```
IF      @RUN = 0
THEN    @RUN = 1;
        RLOAD "INIT.1";
        RLOAD "INIT.2":
        SET @GO
```

where RUN is a Dummy tag.

External Programs

A Wizcon application can exchange information with other programs using recipe files, and can invoke operating system programs and batch files using the **Shell** command. The **Shell** command can be used for file maintenance operations, file transfers, complex calculations, and report generation.

Using the **Print** command with `$B`, `$C`, or `$D`, Wizcon can generate files that can be exported to other programs, such as spreadsheets, databases, and report generators.

Tags

- String tags can receive string values with a maximum of 81 characters. Any character after the 81st will be ignored.

- A maximum of three string tags can be concatenated in the same statement.

  For example, in the statement

  ```
  @STRING_SUM = @STR1  @STR2  @STR3  @STR4
  ```

  the last string tag (@STR4) will be ignored.

In addition, as mentioned above, the @STRING_SUM tag in the example should receive a maximum of 81 characters.

Chapter 17
Recipes

About this chapter:

This chapter describes how to create, define and apply recipes in the Wizcon system, as follows:

Overview, on the following page, describes the basic principle of recipes, including a discussion of recipe files, models and write blocks.

Recipe Model Creation and Modification, page 17-3, describes how to create and modify recipe models.

Recipe Creation and Modification, page 17-6, describes how to create recipes.

Loading Recipes, page 17-10, describes how to load a recipe into the Wizcon system.

Applying Recipes, page 17-11, describes how to set the tag values of an on-going process to a specified recipe.

Recipe Properties, page 17-12, describes how to determine the tag value and the recipe that will be loaded on startup.

Additional Information, page 17-13, provides additional information concerning files and communications.

Overview

This chapter describes *recipes*, lists of tag values that are applied to specific control processes. Value groups are applied to a control process to cause the process to enter a desired working state.

In Wizcon, when a recipe is applied, the tags listed in that recipe are set to the corresponding values that you specified. A tag in a recipe can be assigned a set value or associated with the value of another tag. If a tag is associated with another tag, its value will be the current value of the tag with which it is associated at the time the recipe is applied.

Creating recipes involves two steps:

- Creating a recipe model, as described on page 17-3.
- Creating a recipe, based on a model, as described on page 17-6.

Recipe Files

Recipes are stored as simple text files. Therefore, they can be used to exchange information between Wizcon and other programs.

Models

Recipes are defined and grouped using *models*. A model is a prototype list of tags from which recipes are derived. In Wizcon, models must be defined before recipes. However, while each recipe must belong to a model, recipes do not necessarily have to include tags from the model to which they belong.

Each model and recipe has a unique name. Two different recipes with the same name can belong to different models.

Models, like recipes, are stored as text files, and can be exported to external applications.

Write Blocks

Write blocks are groups of tags to which values are written in a single data transfer operation whenever the recipe is applied.

Recipe Model Creation and Modification

The following section describes how to create and modify recipe models.

When defining recipe models, you create a prototype list of tags from which recipes are derived. This involves the following:

- Entering a description of the recipe model.
- Selecting the tag(s) and stations upon which you want to base the model recipe.
- (Optional) Specifying a write block.

Model recipes are created in the *Model Editing* dialog. This dialog is invoked from the Wizcon Application Studio.

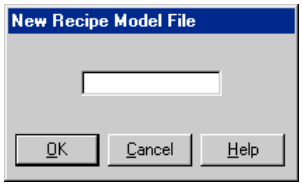
- To create a new recipe model, follow the instructions listed on the following page to invoke the *Model Editing* dialog.
- To modify a recipe model, double-click the recipe model in the **List of Recipe Models**. The *Model Editing* dialog is displayed on the following page.

➤ **To create a recipe model:**

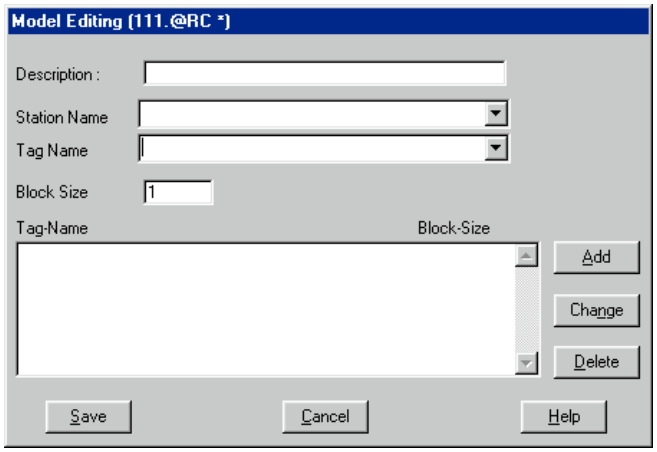
1. Click the **New Recipe Model** button in the Wizcon Application Studio toolbar.

   or,

   In the All Containers section of the Wizcon Application Studio, right-click **Model Recipes** and select **New Recipe Model File** from the popup menu. The *New Recipe Model File* dialog is displayed:



2. Enter the new model name and click **OK**. The *Model Editing* dialog is displayed:



   If you are modifying a model recipe, the dialog will display the model recipe definitions.

The following options are available:

Description	Specifies a brief description of the tag.
Station Name	Specifies the station to which the tag belongs.
Tag Name	Specifies the name of a tag. To view and select from a list of existing tags, click the arrow to the right of the field. Your entry will mark the beginning of the write block.
Block Size	Specifies the number of tags to be included in the write block.

- To add a tag to the model:

  Enter the required options as described above and activate the **Add** button. The tag is displayed in the tag list box.

- To change a tag:

  Select the tag in the tag list box, then select a different tag in the **Tag Name** field and activate the **Change** button.

- To delete a tag from the list:

  Select the tag in the tag list box, and activate the **Delete** button.

This section describes how to create and modify a recipe.

Recipe Creation

A recipe is defined and grouped according to a model, therefore its respective model must be specified before creating the recipe, as described on page 17-3.

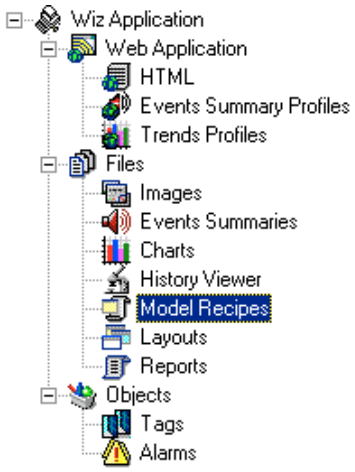
When defining recipes, you define a list of tag values that are applied to a specific control process.

Recipes are created in the *Recipe Editing* dialog. This dialog is invoked from the Wizcon Application Studio.

- To create a new recipe, follow the instructions listed on the following page to invoke the *Recipe Editing* dialog.
- To modify a recipe, double-click the recipe in the **List of Recipes**. The *Recipe Editing* dialog is displayed as shown on the page 17-8.

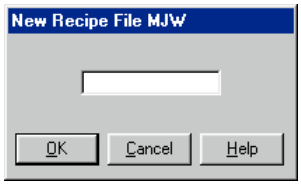
➤ **To create a recipe:**

1. From the All Containers section of the Wizcon Application Studio, double-click **Model Recipes**. A list of the defined model recipes appears underneath the Model Recipe container, as shown in the example below:

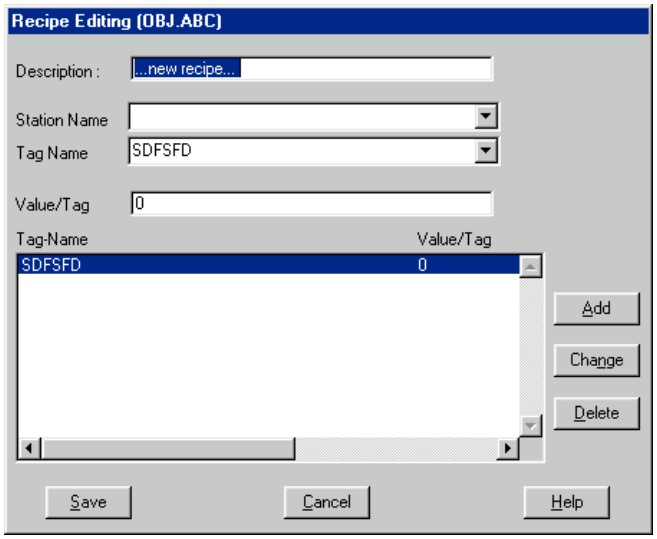


2. Right-click the model upon which you want to base the recipe and select **New Recipe** from the popup menu. Notice how the **List of Recipes** is displayed in the Wizcon Application Studio.

   The *New Recipe File* dialog is displayed:



3. Enter the recipe name and click **OK**. The *Recipe Editing* dialog is displayed:



If you are modifying a recipe, the dialog will display the recipe definitions.

The options available in this dialog are similar to those in the *Model Editing* dialog on page 17-4, with the addition of the **Value/Tag** field, as described:

Value/Tag — Specifies the value for the selected tag. Note that you can specify several values, separated by commas, in which case each value will be written to the next memory location in the PLC. This option can be used only if your PLC supports recipe write blocks.

You can view (and assign) tag input values using the *Single Tag Input* dialog, as described in *Chapter 7, Tags*.

- To add a tag to the recipe:

  Enter the required options as described above and activate the **Add** button. The tag is displayed in the tag list box.

- To change a tag:

  Select the tag in the tag list box, then select a different tag in the **Tag Name** field and activate the **Change** button.

- To delete a tag from the list:

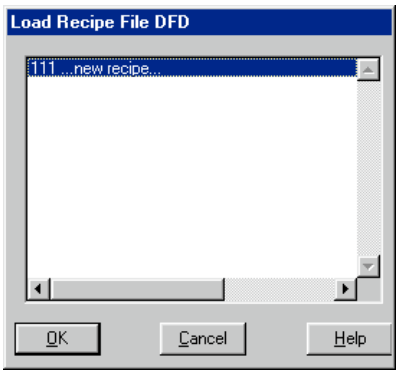
  Select the tag in the tag list box, and activate the **Delete** button.

Activate the **Save** button to save your definitions and close the dialog. The recipe appears in the **List of Recipes** in the Wizcon Application Studio.

After defining model recipes and recipes you can load the recipe to apply its tag values to the Wizcon system.

➤ **To load a recipe:**

1. In the All Containers section of the Wizcon Application Studio, double-click on **Model Recipes** to display the list of defined models.
2. Click the model upon which the recipe you want to apply is based. The recipe is displayed in the **List of Recipes**.
3. Right-click the recipe and select **Transmit Recipe** from the popup menu. The *Load Recipe File* dialog is displayed:



4. Select a recipe and activate the **OK** button. A dialog appears notifying you that the recipe was successfully loaded.

Note: If an error occurs when a recipe is loaded, a message is displayed. An explanation of the error is written to a file called errors.rcp, which can be viewed using any text editor.

Applying a recipe means setting the tag values of an on-going process to a specified recipe.

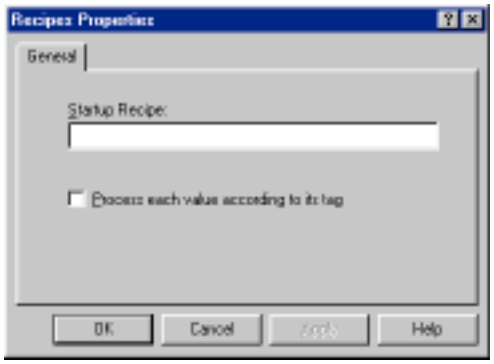
➤ **To apply a recipe:**

1. From the All Containers section of the Wizcon Application Studio, double-click on **Model Recipes** to display the list of defined models.
2. Click the model upon which the recipe you want to set is based. The recipe is displayed in the **List of Recipes**.
3. Right-click the recipe and select **Receive Recipe** from the popup menu. A dialog appears notifying you that the recipe was successfully saved. The tag values of the selected recipe are modified to the tag values of the on-going process.

This section describes how to determine the tag value and the recipe that will be loaded on startup.

➤ **To define recipe properties:**

From the All Containers section in the Wizcon Application Studio, right-click **Model Recipes** and select **Properties** from the popup menu. The *Recipes Properties* dialog is displayed:



The following options are available:

Startup Recipe — Determines the name of a recipe that will be loaded upon Wizcon startup.

Process each value according to its tag — Enables the processing of values according to the tag associated with the appropriate address in the recipe block.

Note: Restart Wizcon for changes to take effect.

Note: The WizPro logger and alarm generator are activated only after the specified recipe is loaded. If the load fails, see the file called error.rcp for a description of the failure.

The following sections provide additional recipe information concerning files and communications.

Files

Recipes and models are stored as text files. These files can be used by external programs, such as spreadsheets, databases, report generators, production management programs, or computation programs. To facilitate this data exchange, the recipe file format must be defined, so that external programs will be able to read them.

Model Files

Model files are named *file* **.RC@**, where *file* is the model name that can include any alphanumeric character. Model files have the following format:

```
D e s c r i p t i o n  ;
gggggggg = 0  ;
gggggggg = 0  ;
gggggggg = 0  ;
gggggggg = 0  ;
gggggggg = 0  ;
gggggggg = 0  ;
gggggggg = 0  ;
gggggggg = 0  ;
    .
    .
```

The first line is a brief description of the model. gggggggg stands for the tag name. Each tag value appears after the tag name, although for model files these values are insignificant.

For example,

```
Booster Startup and Operation  ;
SPEED0 = 0  ;
SPEED1 = 0  ;
VOLT0  = 0  ;
VOLT1  = 0  ;
FLOW   = 0  ;
VOLUME = 0  ;
```

Recipe Files

Recipe files are named *file.recip*, where *file* is the name of the model and *recip* stands for the recipe name which can include any alphanumeric character. Recipe files have the following format:

```
D e s c r i p t i o n  ;
gggggggg = vvvvvv  ;
gggggggg = vvvvvv  ;
gggggggg = vvvvvv  ;
gggggggg = vvvvvv  ;
gggggggg = vvvvvv  ;
gggggggg = vvvvvv  ;
   .
   .
```

The first line is a brief description of the recipe. `gggggggg` stands for the tag name and `vvvvvv` stands for a value (or the name of another tag from which the value is taken). For example,

```
Fine Grain Size  ;
MESH1  = 5       ;
MESH2  = 7       ;
MESH3  = 11      ;
SPEED  = 390     ;
FLOW   = 1200    ;
VOLUME = @VOLMIX ;
```

Note: \@ is used as a text string that begins from the @ sign. The @ sign alone signifies a tag name.

The tag list is taken from the relevant model. The tag values constitute the recipe.

Model and recipe files have the same format:

- In a model file, the tag list constitutes the model.
- In a recipe file, the tag values constitute the recipe.

Since a model file is distinguished from a recipe file only by its extension (.RC@), a recipe can be converted into a model by assigning it the proper extension.

Remember, modifying models (changing the order of tags or tags themselves) may cause conflicts between recipes created before the model was modified and recipes created after the model was modified. Since models provide the recipe names and tag lists, an error will occur when a model tag list was changed, but its name was not. In such a case, recipes will be created that belong to the same model, but with different tag arrangements. Therefore, when models are modified, their names and tag lists must be modified accordingly.

Write/Save Blocks

Write/save blocks that were defined in the *Model Editing* dialog, as described on page 17-4, are saved in the recipe file. The following is an example of a write block defined for the tag ANA01 in a recipe file:

```
Compressor Machine 2  ;
ANA01   = 3,26,17,0,5 ;
ANA06   = 390         ;
AIRPRES = 1200        ;
```

RECIPEPERTAG Mode for Recipe Blocks

In previous Wizcon versions, all the values in a recipe block were processed according to the first tag. For example, the conversion of all the values in the block were performed according to the first tag.

The RECIPEPERTAG mode for recipe blocks enables the processing of values according to the tag associated with the appropriate address in the block. This mode is activated by specifying yes for the new RECIPEPERTAG variable in the WIZTUNE.DAT file (RECIPEPERTAG=YES).

RECIPEPERTAG introduces the following new functions:

- Each value in the block will be converted according to a tag associated with the value's address, when the recipe is saved or loaded.
- During recipe editing, the value's limits will be checked according to the associated tag.
- If a value has no associated tag, that value will not be converted, and no limit checking will be performed. For example, assume the following configuration:

Tag Definition

Tag Name	Address
TAG001	A001
TAG002	A002
TAG003	A004
TAG004	A005

Recipe File: Test.001:

@TAG001 = 10,20,30,40,50

Thus, when TEST.001 is loaded, the following procedure will be performed:

- The first value (10) will be converted according to the TAG001 tag.
- The second value (20) will be converted according to TAG002.
- The value 30 will not be converted since no tag is associated with its address.
- Values 40 and 50 will be converted according to TAG004 and TAG005, respectively.
- The converted values will be packed in the message, and downloaded to the PLC.

Note:

- A recipe block can start only with an analog tag.
- If more than one tag has the same address in a recipe block, the value will be processed arbitrarily according to the parameters of one of those tags.
- Load and Save blocks are allowed only for communication drivers that support Read and Write block operations.

Communications

When a recipe is captured or applied, the tags associated with the control process from which the recipe is extracted, are either read from or written to. Since the recipe operation involves the immediate updating of current tag values, **Forced Read** and **Write** commands are issued by the system during a control process. These commands activate the relevant communication devices.

Chapter 18
Charts

For Web, use Trend Profiles. See Chapter 14, Creating Trend Viewers.

About this chapter:

This chapter describes how to define, edit and view Charts in the Wizcon system, as follows:

Overview, on page 18-3, describes an overview of Wizcon Charts.

Basic Concepts, on page 18-5, describes basic concepts common to Charts, including definition of graphs, **Online**/**History** mode, data boxes, and viewing conventions.

Menu Options, page 18-6, describes the Chart window menu options.

Chart Definition, page 18-10, describes how to define Charts.

Time Definition, page 18-11, describes how to determine the period for which tag values can be traced.

Graph Definition, page 18-13, describes how to define graphs in Charts.

X Axis Definition, page 18-31, describes how to create three types of graphs using the X axis.

Modes, page 18-34, describes the Chart's operational modes: **History** and **Online** modes.

Scrolling and Zooming, page 18-38, describes the scrolling and zooming operations.

Data Box, page 18-42, describes the data box which displays the graph tags, values and descriptions.

Grids, page 18-45, describes grids, which are sets of equidistant points covering the entire graph area.

Chart Properties, page 18-48, describes how to define the line style of a Chart and its window attributes.

Additional Features, page 18-51, describes additional features such as, setting a background color, smoothing graphs, the crosshair cursor, communication errors and authorization.

Keyboard/Mouse Action Summary, page 18-60, summarizes the Chart keyboard and mouse actions.

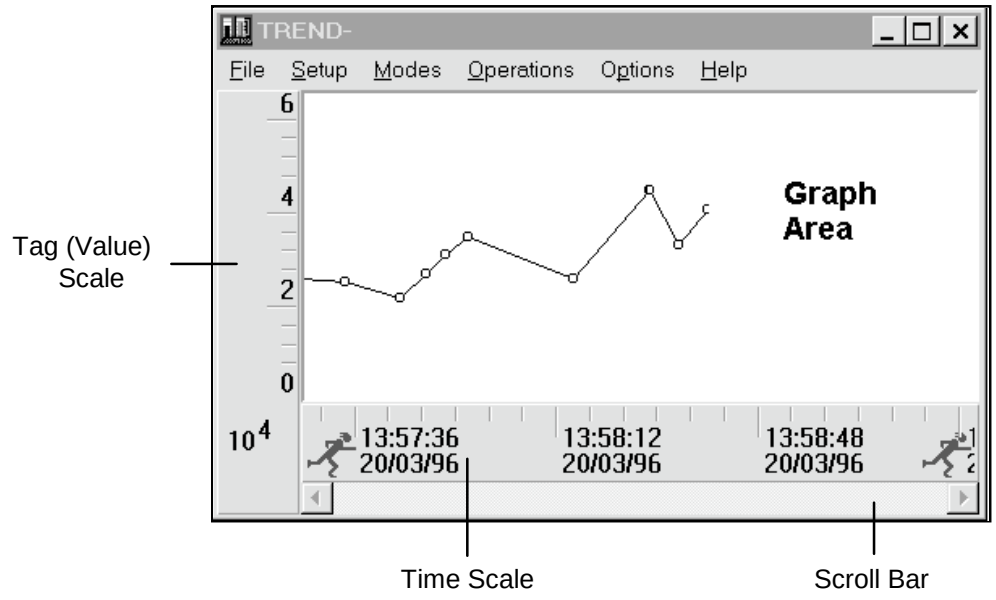
Functional Ranges, page 18-62, describes Chart functional ranges.

Charts provide graphical views of past and current activities recorded by the Wizcon system. They can be used to reveal operational trends, compare device functionality and correlate actions and responses.

A Chart can be defined, edited and viewed. It is displayed in a window where up to 16 activities can be displayed simultaneously, each with its own color and style.

Chart operations are performed according to the operator's authorization level. For example, some operators may be able to define, edit, and view Charts, others may only be able to view Charts.

The following is an example of a Chart window:



In addition to the standard window structure, the Chart window includes the following elements:

Graph Area	The center area used to display graphs.
Tag (Value) Scale	The vertical bar located to the left of the graph area (by default). This bar can be moved by dragging and dropping it at the right or left side of the window.
Time Scale	The horizontal bar located at the bottom of the window, above the scroll bar.
Scroll Bar	The bar at the bottom of the window used to scroll the Chart.

Mouse Operations on the Time Scale

You can double-click the left mouse button on the time scale (horizontal axis) to invoke the *Chart Time Definition* dialog, in which you change the specified range values.

In addition, several zooming and scrolling operations can also be performed on the time scale, as described on page 18-38.

Data Box Window

A Data Box window can also be invoked to provide additional information. This window can contain a description of each graph and the position of the pointer with respect to the graphs, so that accurate readings can be made. The Data Box is described on page 18-42.

Cursor Shapes

You can change the regular cursor shape that appears in the graph area of the Chart to a crosshair. For more details about the **crosshair** option, refer to page 18-53.

The following basic concepts are common to all Charts:

Graphs

Each Chart can be composed of one or up to 16 graphs. Each graph represents the values of a specific tag and has its own attributes, such as style, pattern, color and scale.

All graphs are drawn according to a common time scale that you define at the beginning of the Chart definition procedure.

Online/History

Charts can display either **Online** data or **Historical** data.

- **Online** mode: Graphs are constantly updated according to actual changes in field values.
- **History** mode: The Chart can be configured to display tag values that occurred over a specified time period.

Data Box

A Data Box is an optional window that can be invoked to provide the graph tag names, descriptions and values.

Viewing Conventions

Specific viewing in a Chart is made fast and simple by manipulating the mouse in different ways. The mouse operations include double-clicking, marking a box, dragging and dropping. For example, any tag scale can be dragged and dropped to the right or left side of the Chart window.

Menu Options

The following menu options are available in the Chart window.

- **File**, in which you can specify Chart filing operations, as described below.
- **Setup**, in which you can define Chart components, as described on page 18-7.
- **Modes**, in which you can set the Chart operational mode, as described on page 18-7.
- **Operations**, in which you can perform various Chart and graph operations, as described on page 18-8.
- **Options**, in which you can choose additional Chart options, as described on page 18-9.
- **Help**, in which you can display Chart Help topics.

File Menu

The *File* menu contains the following options:

Select	To do
Save	Save the Chart.
Save As	Save the Chart under a different name.
Delete	Remove a Chart from the application.
Print	Print the currently active Chart.
Exit	Exit the Chart.

Setup Menu

The *Setup* menu contains the following options:

Select	To do
Graphs definition	Define graph characteristics, as described on page 18-13.
X Axis definition	Create an X Axis in your graph, as described on page 18-31.
Time definition	Define the Chart time period, as described on page 18-11.
Background	Define the color of the graph area, as described on page 18-51.
History directory	Specify a path for historical files, as described on page 18-35.
Data box setup	Obtain the graph tags, values and descriptions, as described on page 18-43.
Grid setup	Displays a grid, as described on page 18-46.

Modes Menu

The *Modes* menu contains the following options:

Select	To do
Online	Graphically view tag value changes as they occur in the field, as described on page 18-36.
History	Graphically view historical tag values according to the specified time period, as described on page 18-34.

Select	To do
Average	Smooth a graph by averaging all the values that correspond to a particular time scale point, as described on page 18-52.
Grid	Create a grid graph, as described on page 18-45.

Operations Menu

The *Operations* menu contains the following options:

Select	To do
Zoom Back	Revert back to the last interactively-defined state of the graph or scale, as described on page 18-40.
Default Zoom	Revert back to the initial zoom state of the graph or scale, as described on page 18-40.
Goto	Search for a particular section of the graph and display that section in the Chart window, as described on page 18-41.

Options Menu

The *Options* menu contains options that are toggled on and off, as follows:

Select	To do
Online scroll step	Optimize automatic scrolling, as described on page 18-37.
Cross hair	Change the regular mouse pointer that appears in the graph area to a cross-hair shape as described on page 18-53.
Data box	Present graph tag and time values according to the current pointer location, or current tag values, as described on page 18-42.
Hide Vertical Scales	Remove the vertical scales from the Chart.
Hide Horizontal Scale	Remove the Horizontal scales from the Chart.
Hide Scroll bar	Remove the Scroll bar from the Chart.

Chart Definition involves the following steps:

- Opening a Chart window, as described below.
- Defining Chart time, as described on page 18-11.
- Defining graphs, as described on page 18-13.

Note: You may want to refer to the Getting Started Guide, to see how to create a Chart in more detail.

Opening a Chart Window

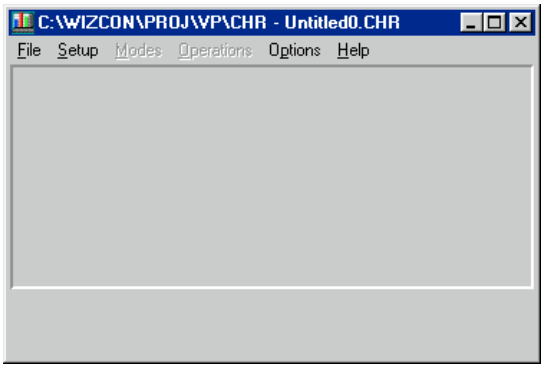
The first step in Chart definition is opening a Chart window.

➤ **To open a Chart window:**

Double-click the **Chart** button in the Wizcon Application toolbar.

Or,

In the All Containers section of the Wizcon Application Studio, right-click **Charts** and select **New Chart** from the popup menu. An empty Chart window is displayed:



The Chart time determines the period for which tag values can be traced. There are three components in the Chart time definition:

- Chart start time.
- Chart time period.
- Window time period.

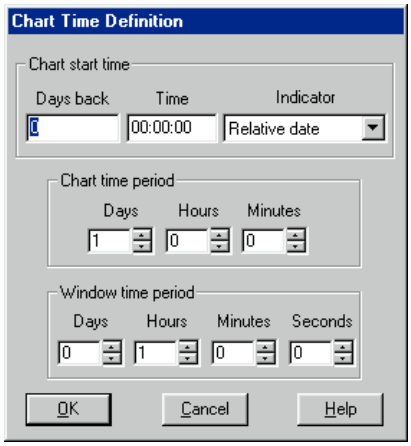
Note: In the History mode, the Chart time is fixed. In the Online mode, the Chart time will continuously change according to the current time.

➤ **To define the Chart time periods:**

On the Chart that is displayed, double-click on the time scale.

or,

From the *Setup* menu, select **Time definition**. The *Chart Time Definition* dialog is displayed:



The following options are available:

Chart start time Specifies the date and time from which the data will begin to be monitored. Click in the **Indicator** field to select one of the following options:

Absolute: Specifies an exact time and date. For example, if you specified the date 08-05-96, and the time 15:10:00, the data will monitored from 3:00 PM on August 5, 1997.

Relative: Specifies the amount of time until the data begins to be monitored. For example, for time 10:00:00 and date 3, the data will begin to be monitored in three days (72 hours) and 10 hours after runtime.

Relative Date: Specifies the number of days until the data begins to be monitored. The time remains absolute. For example, for time of 10:00:00 and date of 3, the data will begin to be monitored on the third day after runtime, at 10:00:00 AM.

Chart time period Specifies the time limits of the Chart. You can define up to 365 days.

Window time period Specifies the length of time that is viewed in a single Chart window. For example, even though you define your Chart to include a thirteen-day span, you may only want to view the values for three days in the Chart window at any given moment. The window time period cannot be longer than the Chart time period.

Once the Chart time periods are defined, you can then define the graph, and other Chart components.

Graph Definition

Graph definition is the next step after the Chart time definition. Graphs are defined by specifying the following items:

- A tag to be represented by the graph.
- The tag value limits.
- Graph display attributes.
- Control limits.
- Graph description.

Each Chart can be composed of one or many graphs. Each graph represents the values of a specific tag and has its own attributes, such as style, pattern, color and scale.

All graphs are drawn according to a common time scale that you define at the beginning of the Chart definition procedure.

Tag Value Display

The Chart window can include up to 16 graphs. Each graph represents one tag. Several parameters control the graph display. A graph can appear in one of the following forms:

Bar

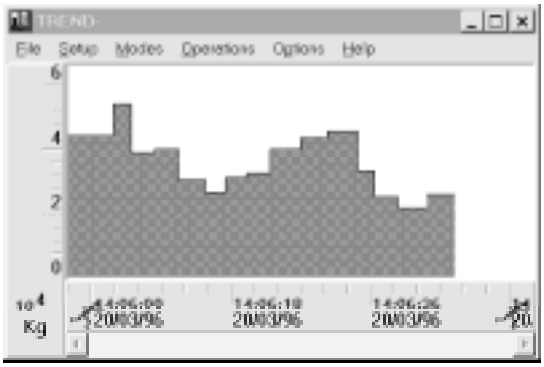
Line

Line with Markers

Markers Only

Note: If you have defined different graphs in different colors in the same Chart, you can use the multi-marker option, described on page 18-48, to automatically assign different shaped markers to each graph.

Remember that for each type of graph, you can also select a fill pattern. An example of a fill pattern defined for a graph is shown in the following Chart:

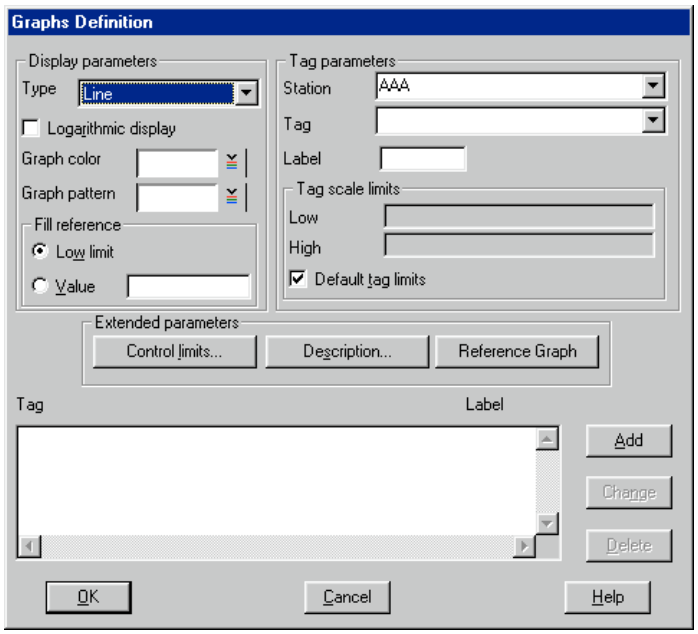


➤ **To define a graph:**

From the *Setup* menu, select **Graphs definition**.

or,

Double-click in the graph area of the Chart window. The *Graphs Definition* dialog is displayed:



The following options are available:

Display parameters — Enables you to select a graph type. The following options are available:

Type: Click in the field to display the following options.

Line: curved line connection.

Line with markers: line that indicates where tag value changes occurred.

Markers only: without connecting lines.

Bar (histogram): represents points.

Logarithmic Display: Determines that the tag scale of the graph displays logarithmic values, as described on page 18-18.

Graph color: Specifies the color of the graph. Click on the arrow to the right of this field and select a color.

Graph pattern: Specifies the fill pattern. Click on the arrow to the right of the field and select a fill pattern.

Fill reference

Determines how a selected pattern will fill the graph, as follows:

Low Limit: Causes the pattern to fill the graph line down to the lower limit value of the graph (the value specified in the **Low** option of the **Tag Scale Limits** field).

Value: Causes the pattern to fill the graph line in between the highest and lowest limits defined in the **Tag Scale Limits** field.

Tag parameters

The following options are available:

Station: Specifies the station to which the tag belongs.

Tag: Specifies the tag represented in this Chart.

Label: Specifies a description of up to four characters that represent the type of units in the graph. For example, lbs can be used for weight.

Tag scale limits

Specifies the limits of the scale.

Low: Specifies the lowest value that will be presented in the graph.

High: Specifies the highest value that will be presented in the graph.

These values appear as the vertical axis limits for the graph.

Default tag limits: Determines that the specified limits are the default limits for any other tag you add to the graph.

Extended parameters

The following options are available:

Control limits: Specifies the lowest and highest tag values for which graph lines will be drawn, as described on page 18-18.

Description: Specifies a description for the graph, as described on page 18-23.

Reference Graph: Sets the parameters for the graph, as described on page 18-24.

- To add the tag to the tag list:

  Activate the **Add** button.

- To change the attributes of a specific tag in the list:

  Select the tag, change the attributes, and activate the **Change** button.

- To delete a tag from the list:

  Select the tag, and activate the **Delete** button.

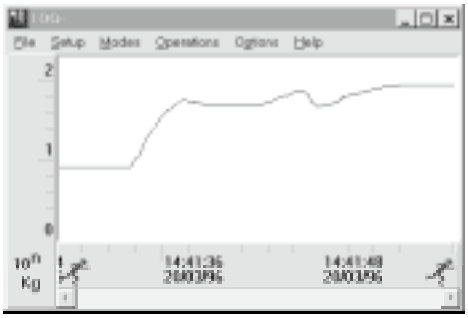
Control Limits

Control limits enable an operator to immediately detect events considered extreme situations. For example, if the temperature of an engine exceeds a certain limit. The limits appear in the Chart as two horizontal lines, one for the upper limit and one for the lower limit.

You can select an option to invert the color of values in the graph that exceed the control limits. The control lines and inverted color make it easy to notice any value that exceeds the limits, so that appropriate action can be taken.

Logarithmic Display

The logarithmic display is defined in the *Graphs Definition* dialog as described on page 18-15. It obtains logarithmic tag scale values, as in the following example:

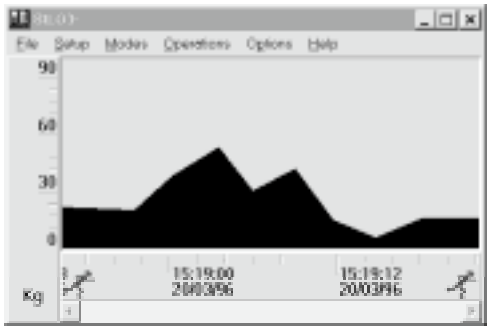


Fill Reference

The **Fill reference** option is defined in the *Graphs Definition* dialog, as shown on page 18-15. It determines how a selected pattern will fill the graph. It consists of two options: **Low Limit** and **Value**.

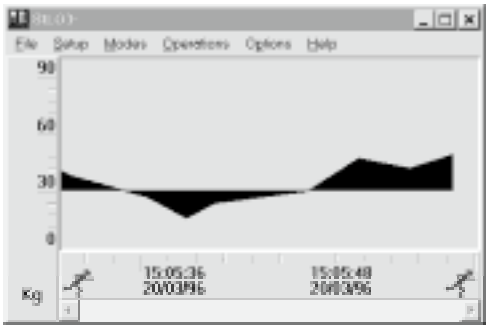
Low Limit

Selecting the **Low Limit** option causes the pattern to fill the graph line down to the lower limit value of the graph (the value specified in the **Low** option of the **Tag Scale Limits** field), as shown in the following example:



Value

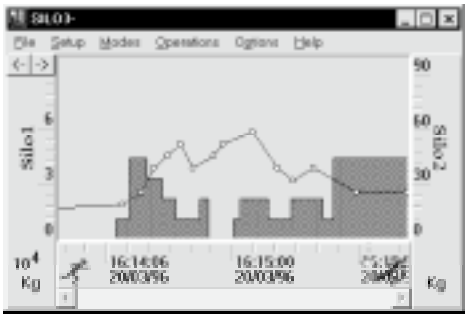
Selecting **Value**: Causes the pattern to fill the graph line in between the highest and lowest limits defined in the **Tag Scale Limits** field. Using similar graph definitions, in the following example, the **Value** option was selected with a value of 30.



Tag Scales

The tag scale consists of a predefined value range defined in the *Graphs Definition* dialog, described on page 18-15, along the vertical axis. Up to 16 tag scales can appear simultaneously in a single Chart window.

The following is an example of a Chart with more than one tag scale:



By default, all the tag scales are located in a pile to the left of the graph area. You can move a tag scale by clicking the right mouse button on the scale, dragging it to the left or right side of the graph area, and dropping it at the new location.

Any scale located in the pile of scales on the left side of the window, can be moved to the top of the pile simply by clicking on the right or left arrow button below the menu bar.

Note that since scale units may sometimes be too large to appear on the scale, the units have a maximum of four digits. At the bottom of the tag scale, the units appear in powers of ten to indicate the actual unit values.

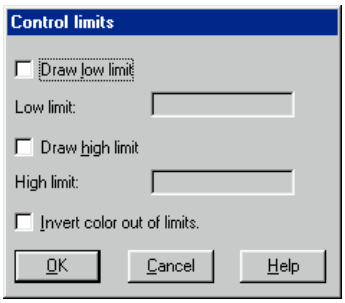
If a graph description was defined to appear in the Chart during the graph definition procedure, the description appears to the left of the tag scale.

Setting Control Limits

You can specify the low and high limit values that will be marked by horizontal lines across the Chart. You do not have to specify both limit values.

➤ **To set control limits:**

Activate the **Control Limits** button in the *Graphs Definition* dialog, as shown on page 18-15. The *Control limits* dialog is displayed. Fill in the fields as required, and click **OK**.

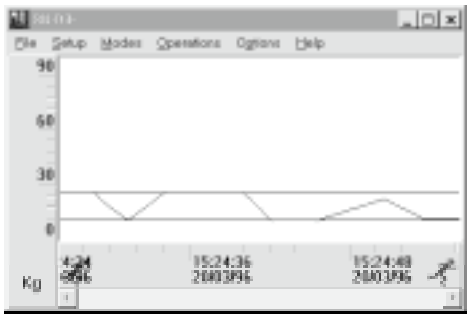


The following options are available:

Draw low limit	Specifies the low limit value. Enter a value in the **Low limit** field.
Draw high limit	Specifies the high limit value. Enter a value in the **High limit** field.
Invert color out of limits	Causes the graph values that exceed the control limits to appear in inverted color. If you select this option, the **Draw** options are enabled.

Note: If you do not select a Draw option or the Invert Color option, the low and high value fields are disabled.

The following is an example of a Chart in which control limits were defined:



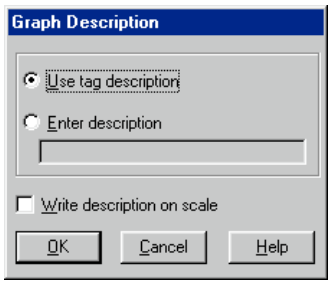
Specifying a Description for the Chart

The Chart description can either be the text specified for the tag during the tag definition, or any other text that you specify.

Select the **Write description on scale** option if you want the description you specified to appear beside the tag scale in the Chart.

➤ **To enter a description:**

Activate the **Description** button in the *Graphs Definition* dialog, as shown on page 18-15. The *Graph Description* dialog is displayed. Fill in the fields as required, and click **OK**.



The following options are available:

Use tag description	Uses the description specified for the tag during tag definition.
Enter description	Uses the text that you enter in the field below as a tag description.
Write description on scale	Specifies that the description appears beside the tag scale.

Note: You cannot define two graphs for an identical tag.

Setting Reference Graph Parameters

A reference graph is a graph with a predefined set of values chosen by the engineer. The values are either supplied manually or taken from the history of a specific tag in a specific time period.

A reference graph is attached to a standard graph and is used to graphically represent a desired behavior of that standard graph. It enables the operator to graphically compare the actual behavior of a tag with the required one.

You can define a reference graph for each standard graph. You can also define one reference graph for all the standard graphs in a Chart window. For example, a Chart showing the heat of two ovens in identical manufacturing lines. One reference graph can be created for each of these lines.

The definitions of a reference graph are saved in the Chart window file and its points in a separate file. The engineer is able to select the file to receive the points of a new reference graph. If there is a reference graph that is the same in two Chart windows, the engineer does not have to define it twice.

A reference graph shares the following attributes with its standard graph.

- Type: Bar, Line, Line with marker, Marker only
- Logarithmic display
- Fill reference
- View limits
- Control limits

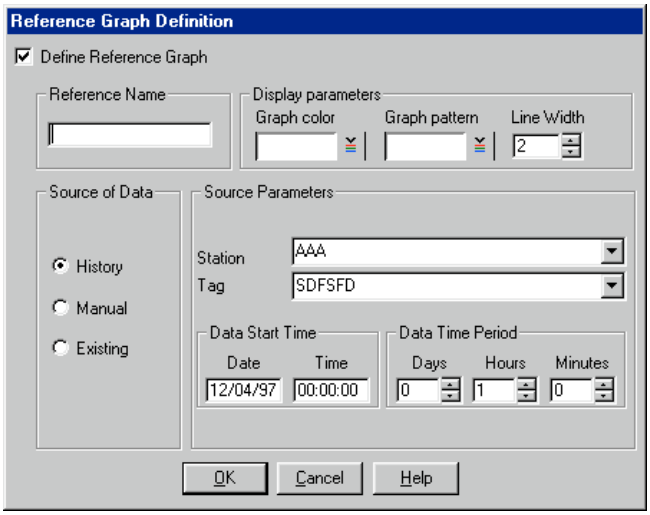
A reference graph has the following display parameters:

- Color: The default is the standard graph color.
- Pattern: The default is the standard graph pattern.
- Line Width: The reference graph has thicker lines than the standard graph.

➤ **To set reference graph parameters:**

After defining a graph and adding it to the tag list in the *Graphs Definition* dialog, as shown on page 18-15, activate the **Reference** button. The *Reference Graph Definition* dialog is displayed.

Check the **Define Reference Graph** check box, to display the options in the dialog, as shown below:



The following options are available:

Reference Name — Specifies a name for the reference graph.

Display parameters — The following options are available:

Graph color: Specifies the graph color. The default color is the standard graph color.

Graph pattern: Specifies a pattern for the graph. The default pattern is the standard graph pattern.

Line Width: Determines a reference graph with the standard graph color but with thicker lines. The default is a thicker line than the line in the standard graph.

Source of Data The following options are available:

History: A reference graph whose points are taken from the history of a specific tag from a specific time period.

Manual: A reference graph whose points are entered manually by the engineer, as described below.

Existing: A reference graph that was used for another standard graph, as described on page 18-29.

Source Parameters Source parameters exist for The **Manual** source parameters are displayed by default and its fields are: described below. The **Existing** source parameters are described on page 18-29.

Station: Specifies the station to which the tag belongs. The default is the station defined in the standard graph.

Tag: Specifies the tag represented in this Chart. The default is the tag defined in the standard graph.

Data Time Period: Specifies the time period from which to take the history of the tag. Includes the Chart start time and its time length.

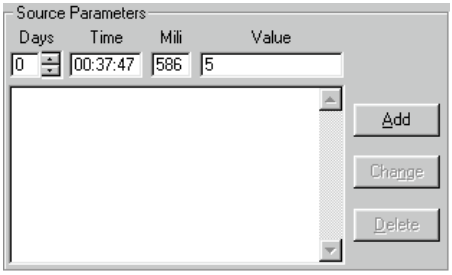
Enter the parameters to define the required reference graph and select a source of data. The source parameters of the data source are described in the following sections.

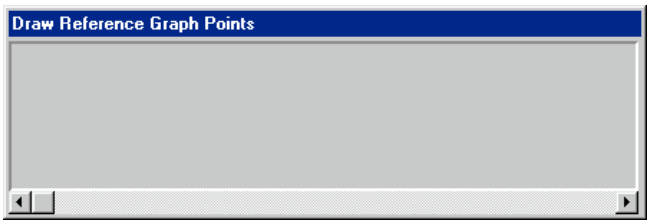
Manual Source Parameters

When **Manual** is selected as the data source in the *Reference Graph Definition* dialog, a reference graph can be defined in which its points are entered manually by the engineer.

➤ **To display the manual source parameters:**

Select **Manual** in the **Source of Data** field. The following source parameters are displayed in the *Reference Graph Definition* dialog and the *Draw Reference Graph Point* window is displayed underneath the *Reference Graph Definition* dialog in which an engineer can manually map values.





The point values with their stamp are displayed. The time stamp will begin with 00:00:00.

There are two possible ways for the engineers to enter points:

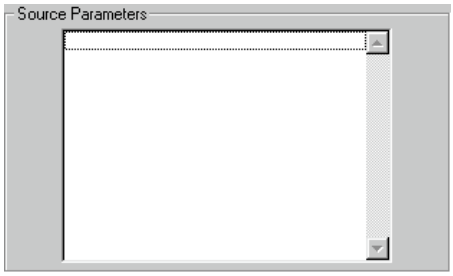
- By moving the cursor over the graph: The values are reflected in the **Time** and **Mili** and **Value** fields of the source parameters. Each time the engineer clicks the mouse, the value appears in the source parameters list of values. Clicking **OK** will save the definitions and close the dialog.
- By entering a list of values into the **Values** field of the source parameters. Clicking **OK** will save the definitions and close the dialog.

Existing (File) Reference Graph

When **Existing** is selected as the data source in the *Reference Graph Definition* dialog, a reference graph can be defined that has been used for another standard graph.

➤ **To display the Existing source parameters:**

1. Select **Existing** in the **Source of Data** field. The following source parameters are displayed in the *Reference Graph Definition* dialog.



2. Select one of the list of existing reference graphs.
3. Click **OK** to close the dialog.

Runtime Behavior of a Reference Graph

The following describes the runtime behavior of a reference graph.

- A reference graph is displayed in both **History** and **Online** mode in the background of the standard graph to which it belongs.
- Data for history reference graphs is read from the directory defined in the Chart history directory definition.
- A reference graph field can be added to the data box, called reference value. In this field the data box will put the value of the reference graph under the mouse pointer. This field will be empty when the data box is showing current values, because reference graphs have no current value.

- Since the reference graph is used only for comparison it will not have a scale.
- Zoom and scroll operations will apply to reference graphs as for standard graphs.
- Average mode will apply to reference graphs as for standard graphs.
- XY Chart: behavior: Same as for time graph.

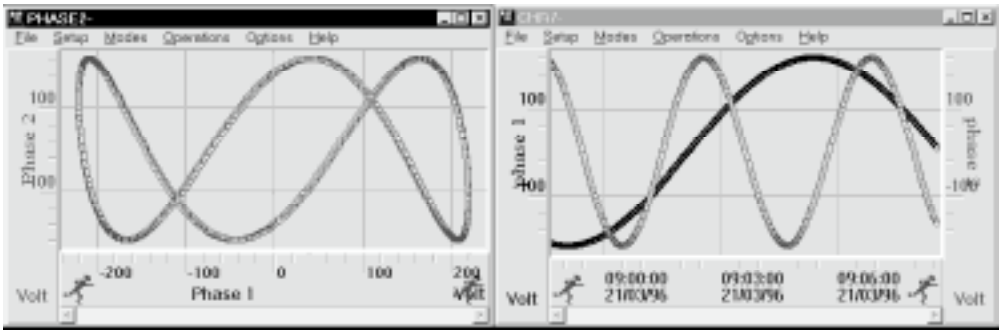
Single Graph Definition

You can change the attributes of a graph in the Chart by double-clicking on the tag scale of that graph (in the Chart). The *Graph Definition* dialog is displayed in short form, without the graph list, for you to modify.

Three types of graphs can be presented in a Chart, as shown in the diagram below.

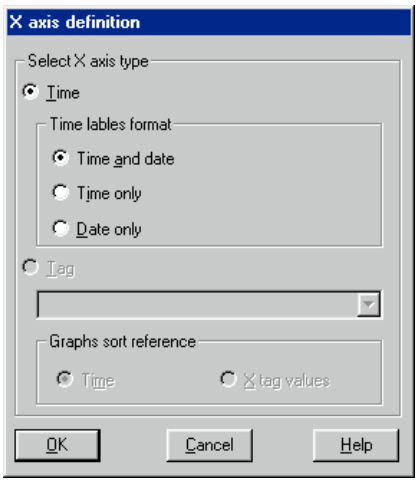
- Two types of XY graphs, in which the X axis represents tag values as illustrated below.
- Time graphs, in which the X axis represents time.

XY Graph **Time Graph**



➤ **To select the graph type:**

From the *Setup* menu, select **X axis definition**. The *X axis definition* dialog is displayed:



The following options are available:

Time — Displays the time values of the X axis.

Time and Date: Displays the Chart time and date in the scale.

Time only: Displays only the Chart time in the scale.

Date only: Displays only the Chart date in the scale.

Tag — Displays the tag values of the X axis.

If you select this option, specify the tag with which you want the X axis to be associated. For a list of tags defined for the current Chart, click on the arrow to the right of the field.

Graphs Sort Reference: determines the order in which the graph points are connected, and indicates which points will appear on the graph. For more details see below.

Time: Causes the graph points to be connected in the order of the time the values changed. In this case, all points will appear on the graph.

X Tag Values: Causes the graph points to be connected in the order of their X values. In this case, for each X there will be only one point on the graph. This point will be of the last Y value in the requested time range.

Graphs Sort Reference

In the graph sort reference of the *X axis definition* dialog, you can determine the order in which the graph points are connected and indicate which points will appear on the graph, as shown on page 18-31.

For example, suppose the following set of tag values was obtained:

	Time1	Time2	Time3	Time4
X	0	0	4	2
Y	0	2	2	2

If you select **Time**, the graph is displayed on the following points:

(0,0), (0,2), (4,2), and (2,2). In this case, there are two points (0,0) and (0,2) with the same X value but two different Y values.

If you select **X Tag Values**, the graph appears on the following points: (0,0), (2,2), and (4,2). In this case, only the last point for the 0 X value is displayed. Note that the order of the points is by their X value order.

Charts can run in one of two operational modes: History, described below, or Online, described on page 18-36.

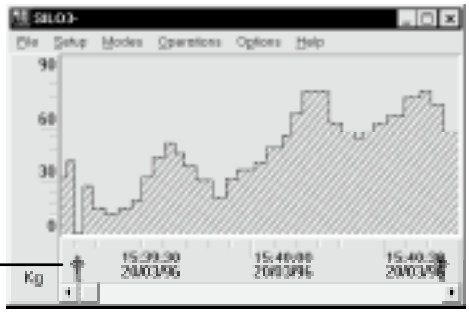
History Mode

Historical Charts provide graphical information for recorded values. This operational mode can be used as an analytical tool to help discover patterns and trends in the plant.

➤ **To activate historical Charts:**

From the *Modes* menu, select the **History** option. A check mark appears beside it to indicate that it is active.

The **History** mode is indicated in the Chart by an icon that appears in the time scale as follows:



In the **History** mode, the Chart includes a horizontal scroll bar that can be used to scroll the Chart. The scroll bar has the following characteristics:

- The left side of the bar represents the Chart start time.
- The right side of the bar represents the end of the Chart period.

- The location of the slider in the scroll bar represents the relation between the window and Chart start times.
- The size of the slider represents the relation between the window and Chart time periods.

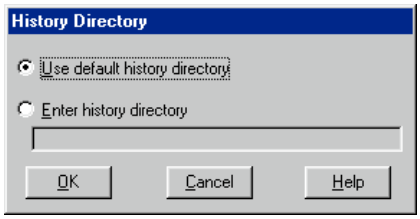
History Directory

Historical data is stored in a default system location specified in the *Design* menu of the Wizcon Application Studio. The directory from which the historical data is taken can be changed.

To retrieve data from a different location, a new path name must be specified. Refer to *Chapter 5 Getting to Know the Application Studio* for more details about defining path names.

➤ **To assign a historical data path name:**

From the *Setup* menu, select the **History directory** option. The *History Directory* dialog is displayed in which you can specify the directory path from which you want your historical files to be extracted.



Online Mode

Online Charts can be used to graphically show a process in progress, by demonstrating operational trends and correlation between parameters.

Online Charts are continuously scrolled along the time (X) axis, so that full window updates are continuously shown.

Note that if the X axis was defined as sorted by **Time**, as described on page 18-33, each time a tag value on the X or Y axis changes, a line will be drawn from the last point on the graph to the new point.

If the X axis was defined as **X Tag Values**, as described on page 18-33, each time an X value changes, the Chart module will check each Y scale. If a Y axis value exists for the X value, the current Y value will replace the X value. If no Y value exists for the X value, the new point will be added to the graph (X, current Y). Each time a Y value changes, and a valid X value exists for that Y value, the new Y value will replace the old Y value.

➤ **To activate Online Charts:**

From the *Modes* menu, select the **Online** option. A check mark appears beside it to indicate that it is active.

Note: When the operational mode is changed from Historical to Online, the Chart automatically jumps to the current time.

The **Online** mode is indicated in the Chart by an icon that appears in the time scale as follows:

Online History icon

Automatic scrolling occurs in the Chart whenever the graph reaches the extreme right side of the window. This is determined by the window period configured for the Chart. You can regulate automatic scrolling.

➤ **To regulate automatic scrolling:**

From the *Options* menu, select **Online scroll step**. A popup menu displays the following options:

Select	To enable
No step	The default scroll (one small bar at a time appears on the time scale).
Full window	A scroll of one full window.
1/2 window	A scroll of one-half of the current window size.
1/3 window	A scroll of one-third of the current window size.
1/4 window	A scroll of one-fourth of the current window size.

Several Chart scrolling and zooming operations can be performed to view the graphs in the Chart in different ways. This enables you to obtain specific tag value information quickly and easily.

The different scrolling and zooming operations are described in the following pages.

Scrolling

Scrolling in the Chart is the same as navigating through time in the Chart. As you scroll the Chart back and forth, the appropriate historical values appear.

Besides the automatic scrolling feature mentioned in the section called **Online Mode**, as described on page 18-36, you can also scroll a graph in the following ways:

- By manually by clicking on the right or left arrow of the scroll bar.
- By clicking inside the scroll bar area.
- By dragging the scroll bar slider.

Zooming

Zooming can be performed on three different components of the Chart window:

- The graph area.
- The tag scale.
- The time scale.

Several zooming operations are common to all of the Chart components. These operations include the following:

Zoom In

This operation is used to view a specific part of a graph. To zoom in to a specific area in a graph, an area must first be designated by drawing a box (clicking and dragging the mouse) to cover the desired part of the graph, time scale, or tag scale. Then, clicking the mouse in the box you drew causes that part of the graph to fill the entire window.

Note that if the zoom in operation was performed in the graph area, the scales change accordingly. Similarly, if the zoom in operation was performed on one of the scales, the graph area also changes accordingly.

In addition, you can also perform the following zoom in operations, using the right mouse button:

- Right-click the mouse once on the time scale to zoom in the graph window periods by a factor of 1.5.
- Right-click the mouse once on a tag scale to zoom in the graph.

Zoom Out

This operation is used to obtain a broader view of a specific part of a graph.

The following zoom out operations can be performed using the left mouse button:

- Left-click the mouse once on the time scale to zoom out the graph window periods by a factor of 1.5.
- Left-click the mouse once on a tag scale to zoom out the graph.

Zoom Back

This operation is used to undo the last zoom operation, and can undo a maximum of ten previous operations.

➤ **To Zoom Back:**

From the *Operations* menu, select the **Zoom Back** option.

or,

Press the **ESC** key.

Default Zoom

This operation is used to revert back to the initial zoom state of all the graphs (the way the Chart first appeared when it was defined), according to the original window time definition.

➤ **To activate the Default Zoom option:**

From the *Operations* menu, select **Default Zoom**.

or,

Press the **HOME** key.

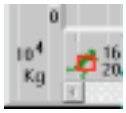
In the **Online** mode, the Chart reverts to how it appeared when the **Online** mode was first activated, except for the time scale, which displays the current time.

Zooming In - Online Mode

A zoom in operation can also be performed in the **Online** mode. When you zoom in to a specific area of the graph in the **Online** mode, automatic Chart scrolling ceases, and the area you zoomed in to fills the entire graph area.

Note: To reactivate online scrolling and return to the original online state of the graph, from the Operations menu, select Default Zoom.

A zoom operation in the **Online** mode is indicated by an icon that appears in the time scale, as follows:



Goto

In addition to the zoom operations described above, you can also perform a **Goto** operation. This operation is used to search for a particular section of a graph, then to display it in the window. The search is based on time, and it is modeless. This means that you will be able to go to a specific graph section, perform any operation in that section, go back to the previous location in the graph, and so on.

➤ **To perform a Goto operation:**

From the *Operations* menu, select **Goto**. The *Goto* dialog is displayed:

The following options are available:

Window start time	Specifies the date and time to search for.
Window time period	Specifies the time period for which the window of the graph appears.
Go	Activates the search.
Go back	Jumps back to the last location before the **Goto** operation was performed.

A Chart data box is a separate window that can be invoked at any time to view the graph tags, values, and descriptions.

A data box presents graph tag and time values according to the current pointer location, or current tag values.

You can determine its setup, as described on the following page.

➤ **To display the Chart Data Box:**

From the *Options* menu, select **Data box**. A check appears beside the item to indicate that the box is active and the data box is displayed. The following is an example of the data box of an existing Chart.

The Data Box includes a **Value Table** field that contains a list of tag names, descriptions, and values according to the current pointer location in the graph, or current tag value. Each tag line appears in the color of the graph it represents. The data can be scrolled using the scroll bar.

The time field in the Data Box shows the time according to the pointer position in time graph and the start time and period of the data shown in the window in XY graphs.

By default, the Data Box appears below the Chart, but can be positioned anywhere on the screen. In addition, the Data Box will never be covered by the Chart.

You can resize the box as described in the following section.

Data Box Setup

This section describes how to configure data box parameters.

➤ **To display the Data Box Setup:**

From the *Setup* menu, select **Data box setup**.

or,

If the data box is open, double-click in the tag list table. The *Data Box Setup* dialog is displayed.

The following options are available:

Enable data box sizing	Enables and disables data box sizing.
Data box title bar	Enables a title bar in the data box.
Show time field	Displays the time field at the top of the data box.
Show header	Displays the names of the field above the value table.
Show tag names	Displays the names of the tags in the table.

Show descriptions	Displays graph description in the table.
Show current values	Displays the current values of the tag, or the values represented by the current pointer location.
Activate current box	Activates the date box.

Note: The Value field in the data box will always appear and cannot be disabled.

Select the options you want and activate the **OK** button.

- To view the data box with the options you selected:

  Activate the **Test** button.

Note: the Test button is disabled if the Activate data box option is not selected.

- To save your options and exit the dialog:

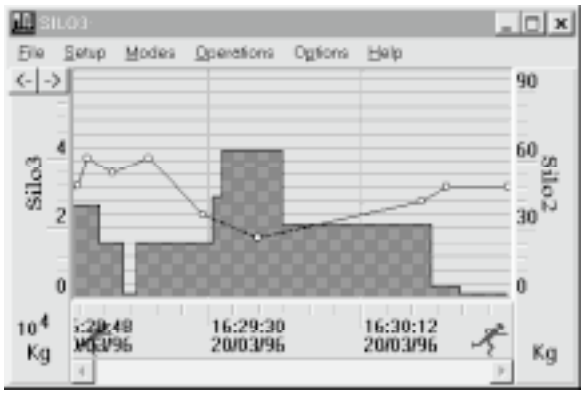
  Click **OK**.

A grid is a set of horizontal lines intersected at 90° angles by vertical lines, covering the entire graph area. The lines can be displayed in subunits or whole units. When activated, the grid appears on the screen enabling you to coordinate the measurement of steps along the X and Y axis.

Subunits

Units

The following is an example of a Chart with an active grid displayed in the background:



Grid Setup

Before you activate the grid, it should be configured by setting several options.

➤ **To configure the grid:**

From the *Setup* menu, select the **Grid Setup** option. The *Grid Setup* dialog is displayed:

The following options are available:

X Axis — You can define the following options:

Each tick: Displays the vertical lines on the grid in subunits.

Each label: Displays the vertical lines on the grid in whole units.

Y Axis — You can define the following options:

Tag: Specifies a tag represented by a Y axis in the Chart, to which the grid is applied.

Each tick: Displays the horizontal lines on the grid in subunits.

Each label: Displays the horizontal lines on the grid in whole units.

Show grid — Activates the grid.

After you define the grid, you can change the grid definition as many times as you want, and activate the **Test** button each time to view the grid, without exiting the dialog. However, the **Test** button is enabled only if you select the **Show grid** option.

Activate the **OK** button to save the definition and exit the dialog.

Grid Activation

You can activate a grid for a graph in one of two ways:

➤ **To activate a grid:**

From the *Modes* menu, select **Grid**. The grid, with the attributes you specified in the **Grid Setup** procedure described on the previous page, covers the entire graph area.

or,

Select the **Show grid** option in the *Grid Setup* dialog, as described on the previous page.

➤ **To deactivate the grid:**

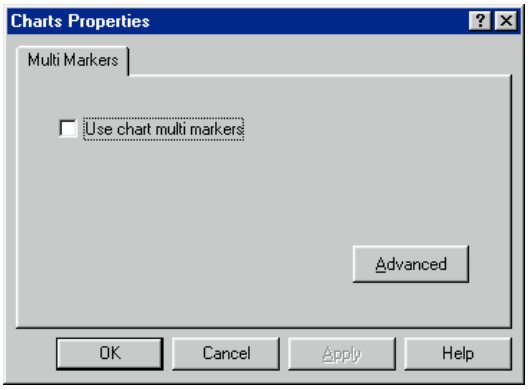
Deselect the **Grid** item in the *Modes* menu.

Note: A check beside the item indicates that the Grid mode is active.

You can define the line style of a Chart and its window attributes.

➤ **To define Chart properties:**

In the All Containers section of the Wizcon Application Studio, right click on **Charts** and select **Properties** from the popup menu. The *Chart Properties* dialog is displayed:



The following options are available:

Use chart multi markers — Determines the style of the markers in the **Line with marker** and **Marker** only graphs. If there are two graphs on your chart, each with a different color, a different marker shape will automatically be defined for each graph. Wizcon uses 10 different marker shapes.

Advanced — Activate to define the Chart window attributes, as described on the following page.

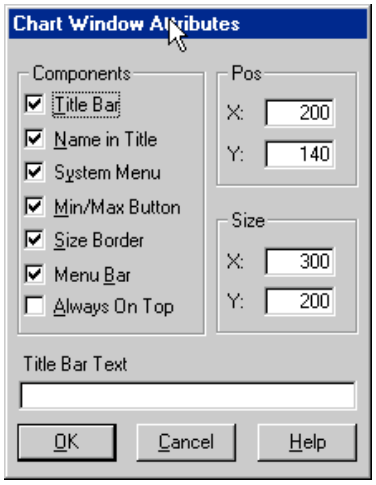
Restart Wizcon for changes to take effect.

Defining Chart Window Attributes

Chart window attributes are similar to Alarm window attributes.

➤ **To define Chart window attributes:**

Press the **Advanced** button in the *Chart Properties* dialog, as shown on the previous page. The *Chart Window Attributes* dialog is displayed:



The following options are available:

Title Bar — Specifies that a title bar appears at the top of the window.

Name in Title — Specifies that the name of the window will appear in the title bar.

System Menu — Specifies that a menu appears when you click on the icon in the top left corner of the window. This menu contains items that can be used to manipulate windows, such as move, size, close and so on.

Min/Max Button	Specifies that a **Minimize** and **Maximize** button appear in the top right corner of the window. These buttons can be used to minimize or maximize the window to predetermined sizes.
Size Border	Enables window borders that can be dragged to change the window size.
Menu Bar	Specifies that a menu bar appears in the window.
Always on Top	Select to display the Chart on top of other open applications.
Pos	Specifies the window X and Y position coordinates in pixels.
Size	Specifies the window size in pixels.
Title Bar Text	Specifies the text that will appear in the Title bar.

You can also define Chart window attributes for a specific Chart by right-clicking the Chart in the **List of Charts** in the Wizcon Application Studio to display the *Chart Window Attributes* dialog, as shown on previous page.

In addition to all the Chart features mentioned, the following sections describe some additional useful features.

Background Color

The background color of a Chart can be defined at any time. Once a color is specified and the Chart file is saved, that color always appears in the background of the graph area.

➤ **To set the background color:**

1. From the *Setup* menu, select the **Background** option. The *Chart Background* dialog is displayed:

2. Select the background color by clicking on the arrow to the right of the color field and select a color from the color palate.
3. Select **Apply the color to the scales** if you want the background color to be used as the scales background color. The default background color of the scales is pale gray.
4. Activate the **Test** button to see how the Chart is displayed.
5. Click **OK** to save the color selection and exit the dialog.

Smoothing Graphs

In some cases, the window period and window size are set so that several values are displayed near the same point in the time scale, resulting in a graph which is plotted as a sequence of vertical lines. These vertical lines represent the range of values for the respective time scale point.

It is possible to obtain smooth graphs by averaging all the values that correspond to a particular time scale point.

➤ **To smooth a graph:**

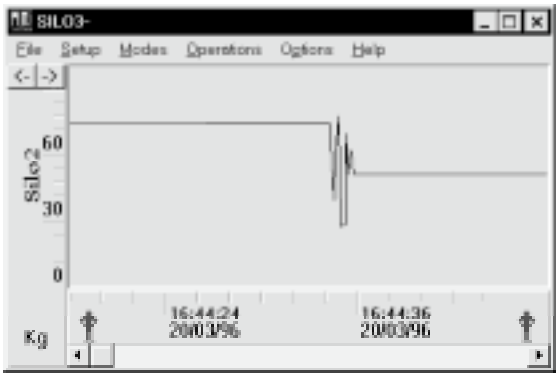
From the *Modes* menu, select **Average**. The **Average** mode is activated.

➤ **To restore original graph values:**

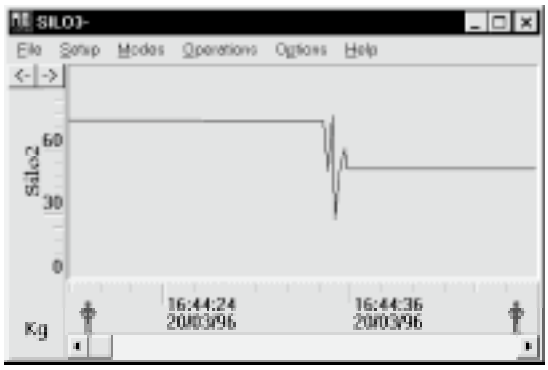
From the *Modes* menu, deselect **Average**.

Note: A check beside the item indicates that the Average mode is active.

The following is an example of a graph before the **Average** mode was activated:



The same graph is displayed in the following example, after the average mode was activated:

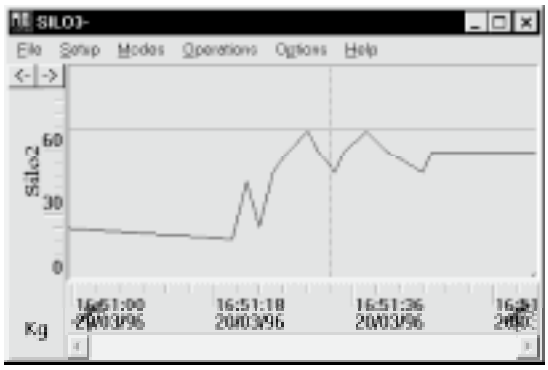


Crosshair

You can cause the cursor to appear as a crosshair in the graph area.

➤ **To change the cursor to a crosshair:**

From the *Options* menu, select the **Crosshair** option. The cursor appears on the Chart as a crosshair, as shown below:



➤ **To change the pointer back to its original form:**

From the *Options* menu, deselect the **Crosshair** option.

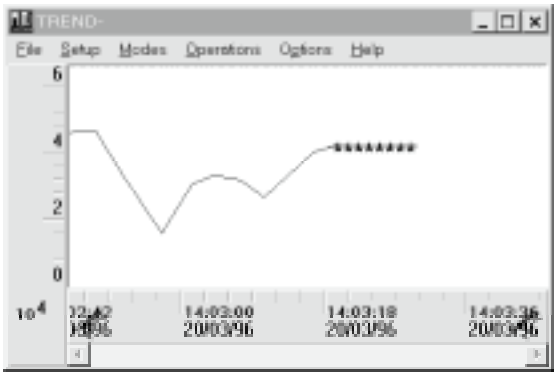
Note: A check beside the item indicates that the crosshair form is active.

Communication Errors

If a communication error occurs, a line of asterisks appears for any tag represented in the Chart which is associated with the VPI to which the error occurred. The line of asterisks is on-going in the **Online** mode, and static in the **History** mode, and appears until the error is corrected.

Note that the line of asterisks appears at the last point (value) in the graph before the error occurred. For example, if a communication error occurred when the graph was at the value 50, a line of asterisks begins to appear at the 50 mark.

The following is an example of a communication error in a Chart:



Authorization

If any item of any menu is disabled, meaning that the item was not authorized for that particular operator, the mouse and key operations that perform the same function as that menu item are also disabled.

Note that you can prevent an unauthorized operator from performing any Chart zooming operation simply by disabling the *Operations* menu. For more details about setting the authorization for menus and menu items, see *Chapter 5, Getting to Know the Application Studio*.

Any active Chart, together with its parameter settings can be saved for later use, by selecting **Save** from the Chart window *File* menu. The Chart is saved in an ASCII file called *.chr. These files can be edited using any text editor.

Note :All colors are RGB colors and not indexed.

The following is an example of a Chart file:

```
VERSION = 5.11  1024 768 WIN
425, 408, 299, 319, 1, 1, 1, 1, 1, 1, 3
' '
; Chart type,  Number of graphs
  XY_T 2 0
; Graphs:
; Tag parameters : Name, Label, Limits(Default(Y/N) Low
High)),   Scale(Side,X-order,Z-order)
; Display parameters : Line-type, Log. Display(Y/N), Color,
Pattern,  Fill ref.(Fill down(Y/N), Value)
; Control-Limits((Show,Invert,Val.)Low,High),
Description(Use  Default(Y/N), Write on scale(Y/N),
Description)
  PHASE1 'Volt' N -240 240 B 0 0
  O N 16711680 15 Y 0
  N N 0 N N 0   Y N 'Phase 1'
  PHASE2 'Volt' N -240 240 L 0 0
  M N 255 15 Y 0
  N N 0 N N 0   Y N 'Phase 2'
; Chart Start time(Type, Date/Days, Time)
  D 0 00:00:00 DT
; Chart time length, Window time length
  01-00-00  00-01-00-00
; Background color
  12632256 N
; History directory(Default(Y/N), Directory name)
  Y ''
; Data box setup(Options(Y/N), x,y,cx,cy)
```

```
  Y Y Y Y Y Y N 0 -104 768 85
; Grid setup(X-axis(Label/Tick), Y-axis(L/T), Tag)
  L L 'PHASE2'
; Chart modes(On-line/History, Average(Y/N), Grid(Y/N))
  O N Y
; Chart options(Scroll step(1/x), Cross hair(Y/N), Data
box(Y/N))
  2 N N
```

- The first line specifies the Wizcon version number and should not be changed.
- The second line contains the Chart window attribute values. The first two values represent the window coordinates (x,y), and the next two values represent the window width and height, respectively. The values after the window height (1 for selected, 0 for not selected) represent the min/max button, title bar, name in title, system menu, size border, and menu bar options (in that order). The last value in the line (3) represents the window type (Chart) and should not be changed.
- The third line contains the title bar text of the Chart window, specified (originally) in the *Set Chart Window Attributes* dialog as described in *Chapter 5, Getting to Know the Application Studio*.

Under **Chart type, Number of graphs**, for Chart type, the following parameters can appear:

T	represents a Time Chart.
XY_X	represents an XY Chart with the X Tag Values option for Graphs Sort Reference.
XY_T	represents an XY Chart with the Time option for Graphs Sort Reference.

The Chart type is followed by the number of graphs in the Chart.

Under **Graphs**, all the graphs in the Chart are specified according to the explanation lines above the values. For line type, the value can be B for bar, L for line, or M for line with markers.

Under **Chart Start time**, the time type is specified as follows: R for relative, D for relative date, or A for absolute. For absolute, the date is then specified, followed by the time. For relative or relative date, the number of days is specified, and then the time.

Under **Chart time length, Window time length**, the time periods are specified, respectively. The Chart time length is in the format days-hours-minutes. The window time length is in the format days-hours-minutes-seconds.

Under **Background color**, the number that appears represents the sequential number of the selected color in the *Chart Background* dialog. The first color in the first row is 1, the next is 2, and so on. The second parameter determines whether to use the background color as the scales background color.

Under **History directory**, if the default history directory is specified (Y), no history directory appears in the single quotes that follow. If N is specified (the default directory is not being used), the directory name appears in the single quotes.

Under **Data box setup**, all of the options are specified by Y (yes) or N (no) values, followed by the data box coordinates (x,y) on the screen, and then the data box width (cx) and height (cy).

Under **Grid setup**, the grid attributes are specified according to the explanation line.

Under **Chart modes**, the different Chart modes are specified according to the explanation line.

Under **Chart options**, Chart option values are specified. For scroll step the x can be 0 for no scroll step (which is the default of one small bar at a time), 1 for a full window, 2 for half a window, 3 for one third of a window, or 4 for one fourth of a window.

When you save a Wizcon chart, automatically a trend file is also created (**.wnt*). When you update the trend, and then you return to your chart and save it, a message appears asking you if you want to save the chart and overwrite the trend. Yes, will overwrite the trend file and No will only save the chart.

Notes:

1. Trends do not support graphs with x-axis defined as a tag. Therefore, if the user created a chart with this kind of graph the new trend will be a regular graph.
2. In the 'Time definition' dialog of the 'chart', the user can choose 'relative' and write the time back in the format "hours:minutes:seconds"
   (for example: 03:40:50) but in the Trend definition the user can write only relative hour, so in the example above the new trend will be 4 hours relative (the time will be rounded up)
3. In the chart the user can choose for the line type – Line, Line with markers, Markers only and Bar. In the trend there is only Line and Line with markers, therefore Markers only in chart will become Line with markers in trend and Bar in chart will become Line in the trend.
4. It is not enough to write the title of the chart in the properties of the chart VP in order for it to be added to the trend, the user should press save on this chart after the title was added.
5. There is no foreground color in the chart definition so in the trend it will always be black (as the default for it in the trend definition)
6. 23 is the highest number that can be defined as relative time in the trend so if the user defined the time in the chart as 'relative' more then 23 hours back he could see only 23 hours back in the trend.

Keyboard/Mouse Action Summary

The following table summarizes the Chart keyboard and mouse actions:

Key/Mouse	Description	Operation
ESC	Pressing the ESC key.	Causes a zoom back to the previous state of the graphs.
HOME	Pressing the HOME key.	Causes a zoom back to the first (original) state of the graphs.
Double-click	Clicking the left mouse button twice rapidly.	In the graph area, causes the *Graphs Definition dialog* to appear. On the time scale, causes the *Chart Time Definition* dialog to appear with the current specifications. On the tag scale, causes the single *Graph Definition* dialog to appear with the specifications of that tag. In the data box tag list, causes the *Data Box Setup* dialog to appear.

Key/Mouse	Description	Operation
Click	Clicking the mouse button once.	After a box is drawn around a specific area in a graph or scale, a single click in the box zooms in to that portion of the graph or scale. Clicking the left mouse button on a tag scale zooms out of that scale and its associated graph. Clicking the right mouse button on a tag scale zooms in to that scale and its associated graph. Clicking the left mouse button on the time scale zooms out by a factor of 1.5. Clicking the right mouse button on the time scale zooms in by a factor of 1.5.
Drag and Drop	Holding down the left mouse button, dragging the cursor to the desired position and releasing the button	This mouse operation can be performed to draw a box around a graph or scale area, whereby clicking the left button in that box afterwards zooms in to that portion of the graph or scale. You can click the right button on a tag scale, and drag that scale to any side of the Chart.

Functional Ranges

The following table summarizes the Chart functional ranges:

Item	Range
Maximum number of graphs for time Chart	16
Maximum number of graphs for XY Chart	15
Maximum Chart time period	365 days
Minimum Chart time period	6 seconds

Chapter 19
History Viewers

About this chapter:

This chapter describes how to generate and use History Viewer lists in the Wizcon system, as follows:

History Viewer List Definition, on the following page, describes how to generate a History Viewer list, define a filter, and specify the directory from which Wizcon will extract the historical tag data.

Defining History Viewer Window Attributes, page 19-9, describes how to define attributes for the History Viewer.

History Viewer lists provide you with simple and straightforward data concerning tags and tag values over specific periods of time.

This section describes the following:

- Generating a History Viewer list, as described below.
- Filtering lists to include only specific tags, as described on page 19-4.
- Specifying the directory from which Wizcon will extract the historical tag data, as described on page 19-7.
- Loading an existing History Viewer list, as described on page 19-8.

Generating a History Viewer List

Wizcon can generate lists of historical tag values for History Viewer purposes.

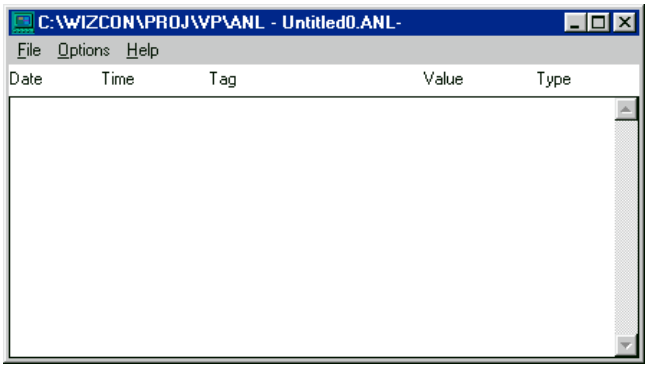
➤ **To generate History Viewer tag lists:**

Click the **History Viewer** button in the Wizcon Application Studio toolbar.

or,

In the All Containers section of the Wizcon Application Studio, right-click **History Viewer** and select **New History Viewer** from the popup menu.

The following dialog is displayed:



History Viewer information is displayed according to the following parameters:

Date

Time

Tag

Value

Type

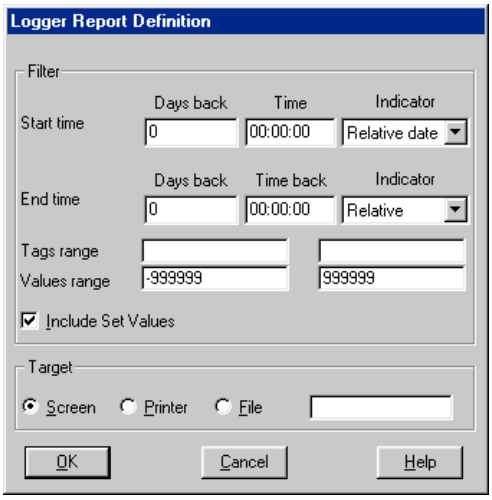
Set the filter to generate the list, as described on the following page.

Filter Definition

You can specify the lower and upper range limits of the tags to be included in the History Viewer list.

➤ **To define a filter for the list:**

From the *Options* menu in the *History Viewer* window, select the **Filter** option. The *Logger Report Definition* dialog is displayed:



The following options are available:

Start Time — Specifies the date and time of the first tag to be included in the History Viewer list. Clicking in the **Indicator** field displays the following further options:

Absolute: The exact time that you specify. For example, if you specified the date 10-05-94, and the time 15:00:00, tag values will be listed from 3 PM on October 5, 1994.

Relative:	The time and date that you specify is relative to the current time and date. For example, for time 10:00:00 and date 3, tag values will be listed from 3 days and 10 hours ago.
Relative Date:	The date that you specify is relative to the current date (the time will remain absolute). For example, for 10:00:00 and date 3, tag values will be listed from 3 days ago, at 10 AM.
End Time	Specifies the range of date and time of the last tag to be included in the History Viewer list. The options you can select for **Indicator** are the same as those for the **Start Time** field described above.
Tag Range	Specifies the range of tag prefixes that you want to include in the History Viewer list.
Value Range	Specifies the range of tag values that you want to include in the History Viewer list.
Include Set Values	Includes set values in the list. Set values are tag values recorded by WizPro upon system initialization.

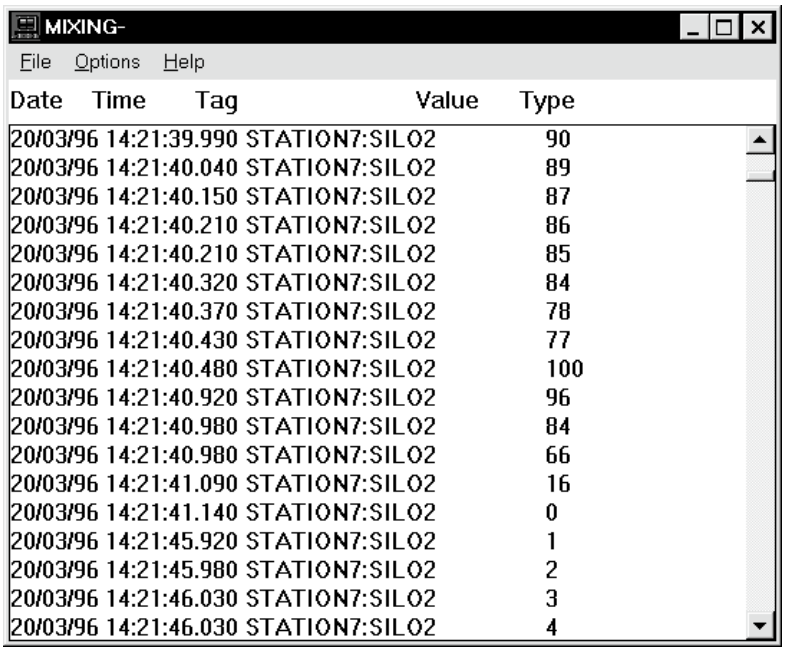
Target Directs the list to one of the following:

Screen: Sends the list to the screen.

Printer: Prints the list to the printer specified in the *Set Printers* dialog, described in the Printers section of *Chapter 5, Getting to Know the Application Studio*.

File: Sends the list to a file. You must enter a file name into the box below the field.

After you set the filter and activate the **OK** button, the History Viewer list is generated. The list filter specifications are preserved until a new window is invoked or the system re-started. The History Viewer list is displayed in the dialog as follows:

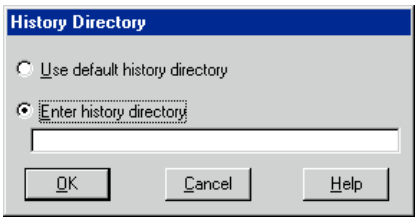


Historical Data Directory

You can specify the directory from which Wizcon will extract the historical tag data.

➤ **To specify the directory:**

From the *Options* menu in the *History Viewer* window, select the **History Directory** option. The *History Directory* dialog is displayed:



The following options are available:

Use default history directory	Determines that the default directory is used to save the data. The directory is that specified for the **History** field, in the *Set Default Paths* dialog. For more details, refer to File Paths section in *Chapter 5, Getting to Know the Application Studio*.
Enter history directory	Specifies the path of the directory in which the historical data file is located.

- To save the existing History Viewer:

  From the *File* menu in the *History Viewer* window, select **Save**. A standard *Save As* dialog is displayed in which you can name the file. Click **OK** to save the file and exit the dialog. The History Viewer list is saved with the data definitions.

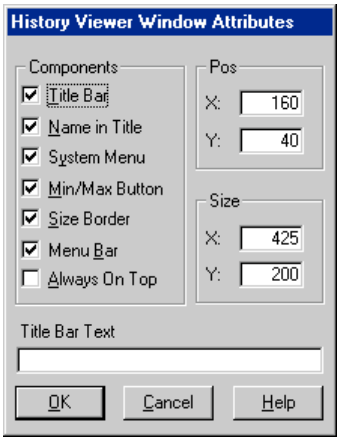
Loading an Existing History Viewer

You can load an existing History Viewer from the Wizcon Quick Access bar.

➤ **To load a History Viewer:**

1. Click on the **Load History Viewer** button in the Wizcon Quick Access bar. A standard *Open* dialog is displayed where you can select the History Viewer you want to open.
2. Click **OK** to close the dialog and open the History Viewer.

You can define parameters for the History Viewer by right-clicking on **History Viewer** in the All Containers section of the Wizcon Application Studio, and selecting **Properties**. The *Set History Viewer Window Attributes* dialog is displayed:



The following options are available:

Title Bar — Specifies that a title bar appears at the top of the window.

Name in Title — Specifies that the name of the window will appear in the title bar.

System Menu — Specifies that a menu appears when you click on the icon in the top left corner of the window. This menu contains items that can be used to manipulate windows, such as move, size, close and so on.

Min/Max Button — Specifies that a **Minimize** and **Maximize** button appear in the top right corner of the window. These buttons can be used to minimize or maximize the window to predetermined sizes.

Size Border	Enables window borders that can be dragged to change the window size.
Menu Bar	Specifies that a menu bar appears in the window.
Always on Top	Select to display the History Viewer on top of other open applications.
Pos	Specifies the window X and Y position coordinates in pixels.
Size	Specifies the window size in pixels.
Title Bar Text	Specifies the text that will appear in the Title Bar.

Chapter 20
Reports

About this chapter:

This chapter describes how to use the Wizcon User-Defined Report utility in the Wizcon system, as follows:

Overview, on the following page, describes an overview of the Wizcon User-Defined Report utility.

Report Definition and Modification, page 20-3, describes how reports are defined.

Field Summary, page 20-31, describes how to invoke the field summary report.

Saving Reports, page 20-33, describes how to save reports.

Generating Reports, page 20-37, describes how to generate completed reports from the command line and with a Wizcon Language command.

The Wizcon User-Defined Report utility can be used to define customized reports for specific plant requirements. Wizcon generates the reports that you define with this utility as free-format documents that can contain text and calculated values (fields), based on historical data stored in system files.

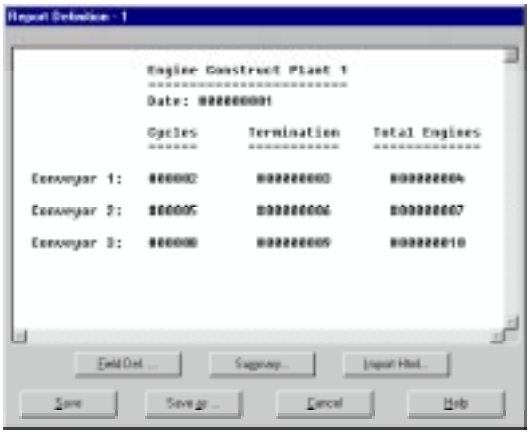
After the report is defined and saved, it can be generated by typing the command at the command line, or by command in Wizcon Language, as described on page 20-37.

A report is composed of the following components:

- **Frame** Free text and fields
- **Fields** Tag and calculated values, including report date and time

Frames are stored in ASCII files called *.rpt and field data is stored in files called *.rpd.

The following is an example of a customized report in the User-Defined Report utility:



Defining a report consists of four steps:

- Invoking the *Report Definition* dialog, as described below.
- Creating a frame which is the shell of the report that contains the text and the fields, as described on page 20-5.
- Entering field codes into the frame, as described on page 20-7.
- Inserting field definitions, which are the calculated values inserted in the text at specific locations, as described on page 20-9.
- Saving your definitions.

After you have defined a report, you can obtain a complete list of all the defined fields in your report. The list appears in a dialog in which you can add, change and delete field definitions during runtime.

Invoking the Report Definition Dialog

The *Report Definition* dialog is invoked from the Wizcon Application Studio.

- To define a new report, follow the instructions listed on the following page to invoke the *Report Definition* dialog.
- To modify a report, double-click the report in the **List of Reports**. The *Report Definition* dialog is displayed as shown on the following page.

➤ **To invoke the Report Definition dialog:**

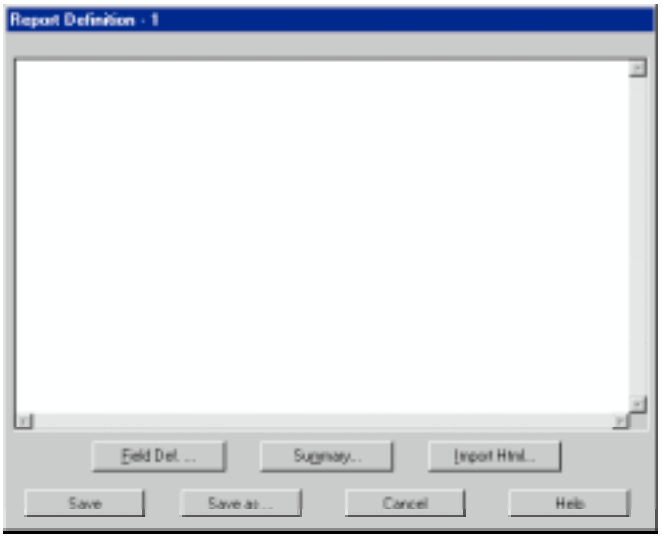
Click the **New Report** button in the Wizcon Application Studio toolbar.

or,

In the All Containers section of the Wizcon Application Studio, right-click **Reports** and select **New Report** from the popup menu.

The *New Report File* dialog is displayed:

Enter a name for the report and activate the **OK** button. The *Report Definition* dialog is displayed. If you are modifying a report, the dialog will display the report definitions.



The following options are available:

Field Definition	Activate to insert fields as described on page 20-9.
Summary	Activate to receive a complete list of all the defined fields in the report.
Import Html	Activate to import an HTML file as a template, as described on page 20-11.

Creating a Frame

The text and fields that comprise the report are called a frame. You can create a frame in one of two ways:

- Entering text directly into the *Report Definition* dialog, shown on the previous page.
- Using any text editor.

You can also print a frame, as described on the following page.

➤ **To create a frame:**

In the *Report Definition* dialog, displayed on the previous page, enter the text exactly as you want it to appear in the report.

The report editor operates like any other ASCII text editor. For text, you can type any character, except the number sign (#), which is reserved for fields. If the report screen is full, you can scroll it using the dialog scroll bar.

You can also use your own text editor to create a frame file. However, make sure that the frame filename is saved as `[filename].rpt`.

Frames can be printed before generating a report. You can print from the command line or from the Explorer.

➤ **To print from the command line:**

1. In the *Report Definition* dialog, shown on page 20-4, activate the *Save* button. The frame is saved in the default file location with the extension *.rpt.
2. From the command line enter:

   ```
   COPY RPT.[name of report].DAT LPT1:
   ```

In order to enable control characters as form feed in report forms, you can use the ~DD, where DD is the printer control code. For example, use ~12 to form feed (control 12).

Some common ASCII codes are:

- 12 Form feed
- 15 Compressed mode (132 characters per line)
- 18 Normal mode (80 characters per line)

You can add codes for your printer to print the report headings in a large font, in bold or underline characters, and so on. These control characters should be defined in the report frame, combined with the text and fields of the report. To use these control characters designate your printer only to one of the following ports: LPT1, LPT2, LPT3, or LPT4.

Note: This is only available in version 7.01 and higher.

➤ **To print from the Explorer:**

1. In the *Report Definition* dialog, shown on page 20-4, activate the *Save* button. The frame is saved in the default file location with the extension *.rpt.
2. From the Windows Explorer, right-click the file and select **Print** from the popup menu. The frame is sent to print.

Entering Field Codes

A hash mark followed by numbers represents a field code. For example, #00001. The number must be an integer. Thus, #0.012 is not a legal field.

Field codes are used to define field definitions:

Field codes should be entered in the report frame in proper numerical order.

- Field codes consist of alphanumeric characters that represent the field number and type, preceded by a number sign (#). For example, the code #00001 represents field number 1.
- The length of the field and the field value format are specified by typing the number of the field in the format and the length that you want.

  For example, all of the following fields refer to field number 12, in different formats:

  #00012
  #012.000
  #12

- If a tag value represents date or time, a special field can be assigned for that value. To define a date or time, type the letters **D** for date, **T** for time (tag values are measured as seconds, starting from midnight), **M** for minutes (tag values are measured as minutes, starting from midnight), or **S** for time with seconds, after the # sign.

  For example:
  #D00000012
  #T00012
  #M00012
  #S00000012

- **#D — Date** fields should have a length of eight spaces to provide enough space for hyphens or slashes.
- **#T — Time** fields should have a length of five spaces for the format hh:mm. For example, if tag values is 600, the report will show this value as 00:10.
- **#M — Time with Minutes** fields should have a length of five spaces for the format hh:mm. For example, if tag values is 600, the report will show this value as 10:00.
- **#S — Time with Seconds** fields should have a length of eight spaces for the format hh:mm:ss.

Up to 9,999 fields can be defined per report. The report frame does not have to include all the fields that you define.

Some fields can be used to calculate other fields. You can also define fields that will be added to the report frame for later use.

The following are examples of field contents:

- The minimum value of a tag in the last work shift.
- The total amount of time a tag exceeded a value in the past week.
- The total number of times a tag was in the ON state in the past month.
- The efficiency of a tag, based on the total amount of time it was in the ON state in the past month.

A list of fields can be viewed in the *Field Summary* dialog described on page 20-31.

Inserting Field Definitions

Field definitions can only be defined for codes that were entered in proper numerical order. For example, you cannot define a field for the code #00003, if codes #00001 and #00002 were not yet defined in the report.

➤ **To define a field:**

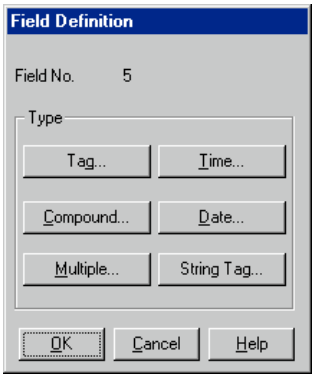
In the *Report Definition* dialog, as displayed on page 20-4, select the field code or double-click on it and activate the **Field Def** button.

If you do not know the next field number to be defined, or if you want the report utility to determine the next field number, enter a high field number such as #9999, then activate the **Field Def** button. The utility will prompt you to change the field number you entered with the next ordinal number to be defined.

or,

Activate the **Field Def** button without first selecting a code in the report. The utility will then enable you to define a field for the next ordinal field number in the report.

The *Field Definition* dialog is displayed:



The following Field Definition types are available. They are described in more detail on the following page.

Field No.	Displays the number of the current field.
Tag	Determines tag values and value calculations.
Compound	Determines the calculated value of two other fields and/or constants.
Multiple	Determines the calculated value based on a group of other fields.
Time	Determines that a specific time is included in the report.
Date	Determines specific dates in the report.
String Tag	Determines predefined tag string values.

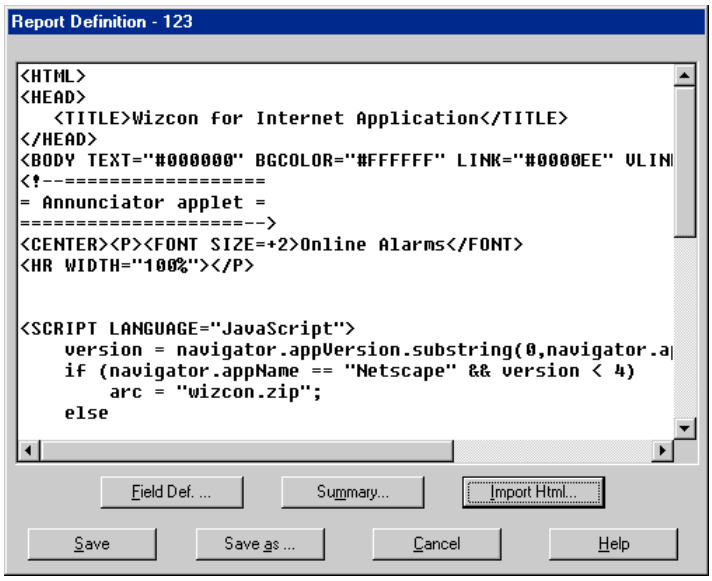
Importing HTML Templates

You can use any HTML file as a template for a report. The file can be located anywhere on your system and can be created using any standard HTML editor.

After importing the file, you can modify it by adding Wizcon report fields, as described on page 20-9.

➤ **To import HTML:**

1. In the *Report Definition* dialog, as displayed on page 20-4, activate the **Import HTML** button. A message appears asking if you want to discard changes. Click **Yes**. The *Import HTML File* dialog is displayed.
2. Select the HTML file that you want to use as a template and click **Open**. The file appears in the text window of the *Report Definition* dialog, as shown below:



3. Add the required Wizcon report fields, and click **Save** to save the report and exit the *Report Definition* dialog.

Note: To produce a report, use the REP.EXE report generator and allocate a file name ending with .HTML.

Field Definition Types

The following field definition types are available in the *Field Definition* dialog, as shown on the previous page.

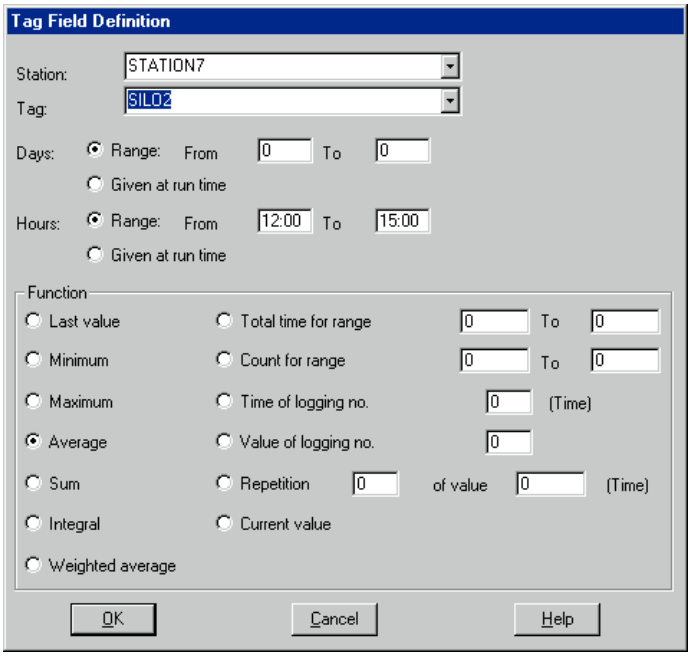
- Tag, in which you specify the tag and its station for which the field will be defined, as described on the following page.
- Compound, in which you define calculated values based on the values of two other fields and/or constants, as described on page 20-22.
- Multiple, in which you define multiple type fields, which are calculated values based on a group of other existing fields, as described on page 20-24.
- Time, in which you can define time fields that will return specific times in the report, as described on page 20-27.
- Date, in which you define fields that will return specific dates in the report, as described on page 20-28.
- String Tag, in which you define the field for which the value of the string will appear in the report, as described on page 20-28.

Tag Field Type

The **Tag** field type is used to calculate tag values according to several options that you can select as described on the following page.

➤ **To activate the Tag field:**

In the *Field Definition* dialog, activate the **Tag** button. The *Tag Field Definition* dialog is displayed:



The following options are available:

Station Specifies the station to which the tag belongs.

Tag Specifies the tag name.

Days/Hours

Specifies the days and hours of the tag records that you want to use for the calculations in the report.

Range: Determines that the dates you use are relative to the *reference* date, the date displayed on your computer. Since the reference date is usually the current date, 0 represents the reference date, and 1 is the day before the reference date (future dates cannot be used).

Given at Run Time: Specifies that the values will be determined by the Wizcon Language REPORT command, or the REP command used to generate reports at the Windows 95 command line.

Function

Specifies the function to be performed on the recorded values. The following options are available:

Last value: Returns the tag value at the end of the specified interval. This value will be the last value recorded in the interval you specified.

Minimum: Returns the lowest value recorded during the specified interval.

Maximum: Returns the highest value recorded during the specified interval.

Average: Returns the arithmetic average of all the values recorded during the interval.

Sum: Returns the sum of all the values recorded during the interval.

Integral: Returns the sum of the products of each recorded value, multiplied by the time until the next recording. This function is explained in more detail on page 20-18.

Weighted average: Returns the average value of the tag relative to the time the value occurred in the tag. This function is explained in more detail on page 20-19.

Total time for range: Returns the total amount of time that tag values were in the range specified. This function is explained in more detail on page 20-20.

Count for range: Returns the number of times that tag values were recorded for a specified range.

Time of logging no.: Returns the time of the *n*th recording, after the beginning of the interval. For example, if you want the hour at which the seventh recording occurred, enter 7.

Value of logging no.: Returns the value of the nth recording after the beginning of the interval (for example, if you want the value of the fourth recording, type 4 for this option).

Repetition --- of value --- (Time): Returns the time of a specific occurrence of a specific value. For example, the function can return the hour at which a value of 1.0 was recorded the 2nd time. For **Repetition**, type a 0 to obtain the last time the value you specified appeared for that period. For example, **Repetition** 0 of **value** 100 will return the last time the tag had the value 100.

Current value: Returns the current value of a tag. This function causes Wizcon to force-read a tag when generating the report. For examples, refer to page 20-20.

The following table indicates whether or not the SET (initialization) value of a tag (stored in the history file) is included in report function

calculations. A plus (+) means that the value will be included in the calculation, and a minus (-) means that it will not be included.

Function	SET Value Included
Last value	+
Minimum	+
Maximum	+
Average	-
Sum	-
Integral	+
Weighted average	+
Total time for range	+
Count for range	-
Time of logging no.	-
Value of logging no.	-
Repetition of value	-

The **Integral** function returns the sum of a series of products. Each product is the result of multiplying a single log value, by the time elapsed until the next recording.

Note that the integral unit is not necessarily meaningful.

For example, suppose the time interval is from 12:00 to 13:00, and there are three records in the historic file, as follows:

Tag Name	Tag Value	Time of Logging
ANA00	11	12:00
ANA00	5	12:10
ANA00	7	12:30

According to the following Integral function calculation:

(11*600) + (5*1,200) + (7*1,800) = 25,200

where:

11*600 11 multiplied by 600 ((12:10-12:00) * 60 seconds)

5*1200 5 multiplied by 1200 ((12:30-12:10) * 60 seconds)

7*1800 7 multiplied by 1800 ((13:00-12:30) * 60 seconds)

The result will be 25,200.

Weighted Average

The **Weighted Average** function returns the average value of the tag, relative to the time that the value occurred.

For example, suppose the time interval is from 12:00 to 13:00, and the following three records are in the historic file:

Tag Name	Tag Value	Time of Logging
ANA00	11	12:00
ANA00	5	12:10
ANA00	7	12:30

According to the following weighted average calculation:

25,200 / 3,600 = 7

where:

25,200 is the Integral value.

3,600 is the total time ((13:00-12:00) * 60 seconds)

Note: 13:00 to 12:00 equals 1 hour, or 60 minutes.

The result will be 7.

Total Time for Range

The **Total time for range** function returns the total amount of time (including seconds) that the tag received values in the specified range. For example, suppose the time interval is from 12:00 to 13:00, the range is 7 to 11, and the following three records are in the historic file:

Tag Name	Tag Value	Time of Logging
ANA00	11	12:00
ANA00	5	12:10
ANA00	7	12:30

According to the following calculation:

10 minutes (12:00 to 12:10) for the value 11.

30 minutes (12:30 to 13:00) for the value 7.

The result will be 00:40:00,

Current value

Returns the current value of a tag. This function causes Wizcon to force-read a tag when generating the report. For example:

1. For the last value at the end of a work shift:

   Days: from 0 to 0

   Hour: from 06:00 to 14:00

   Function: **Last value**

2. For the amount of items produced yesterday:

   Days: from 1 to 1

   Hour: from 00:00 to 23:59

   Function: **Sum**

3. For the minimum temperature during the last shift:

   Days: from 0 to 0

   Hour: from 22:00 to 06:00

   Function: **Minimum**

4. For the maximum fuel consumption during the week that ended three days ago:

   Days: from 9 to 3

   Hour: from 00:00 to 23:59

   Function: **Maximum**

5. For the total time the machine operated during the weekend:

   Days: from 2 to 1

   Hour: from 00:00 to 23:59

   Function: **Total time for range 1. to 1**

Note: In this case, a digital tag is used to determine when the machine is active (1), and not active (0).

6. For the number of times the machine stopped during the last shift:

   Days: from 0 to 0

   Hour: from 00:00 to 14:00

   Function: **Count for range 0. to 0**

   Note: In this case, a digital tag is used to determine when the machine is active (1), and not active (0).

7. For the time that a boiling temperature value was detected for the tenth time:

   Days: from 1 to 1

   Hour: from 00:00 to 23:59

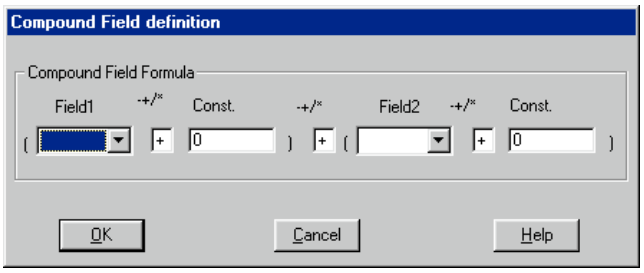
   Function: **Rep. 10 of value 100**

Compound Field Type

A **compound** field is a value that is calculated based on the values of two other fields and/or constants that you specify.

➤ **To activate the compound field:**

In the *Field Definition* dialog, activate the **Compound** button. The *Compound Field definition* dialog is displayed:



The following examples help to explain the use and functionality of the **Compound** field. Note that the calculation is performed from left to right.

- For the total time to produce all the items, fill in the dialog as follows:

  where:

  Field 2 is a tag field containing the average time to produce one item.

  Field 3 is a tag field containing the total amount of items produced.

- For the area of a circle, fill in the dialog as follows:

  where:

  Field 4 is a tag field containing the radius of the circle.

  Constant 3.1416 is the pie factor.

Note that:

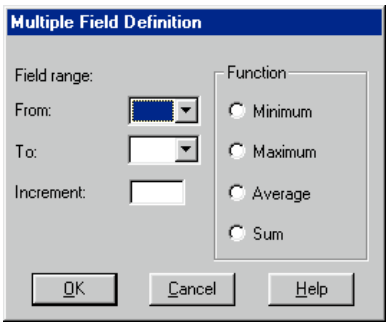
- Compound fields can be nested.
- The code numbers of the fields included in the compound formula must be codes of fields that were defined in the report.

Multiple Field Types

Multiple field types are value calculations based on a group of other existing fields.

➤ **To activate the compound field:**

In the *Field Definition* dialog, activate the **Multiple** button. The *Multiple Field Definition* dialog is displayed:



The following fields are available:

From/To — Specifies the field numbers that you want to include in the calculation. Click in the field to view the available fields.

Increment — Determines the fields you want to include in the calculation. Enter `1` to receive the values of all of the fields, in the range you specified.

However if, for example, you have a matrix of three columns (9 fields) and you want only fields 2, 5,

and 8 to be included in the calculation, you would specify **From** 2, **To** 8, and **Increment** 3, which would cause field number 2 to be included, the field in the next column to the immediate right (5), and the next (8).

Function Specifies the function to be performed on the recorded values. The following options are available:

Minimum: Returns the lowest value in the group of fields.

Maximum: Returns the highest value in the group of fields.

Average: Returns the arithmetic average of the values of all the fields in the group.

Sum: Returns the sum of the values of all the fields in the group.

Examples of Use

Following are some examples of when and how to use a multiple field type.

If you want to receive a calculation of total production for the whole month, enter:

From: 4
To: 124
Increment: 4
Function: Sum

This example is valid assuming that you defined a 4x30 matrix of fields, in which the fourth column is the total production for each day of the month. A value of 4 for **Increment** means that only the values of the fields in the fourth column of the matrix will be included in the sum.

Suppose a plant includes two machines for which three work shifts are organized. In addition to obtaining information about each machine and shift, you would like to obtain totals of each. You can define Multiple fields to store the total information, as follows:

	Machine 1	**Machine 2**	**Total**
Shift 1	#00001	#00004	#00009
Shift 2	#00002	#00005	#00010
Shift 3	#00003	#00006	#00011
Total	#00007	#00008	

In this table, the multiple fields are fields 7 to 11. The definition for these fields would be as follows:

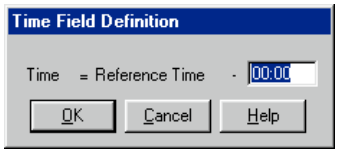
- Field range # 7 is defined from 1 to 3, increment 1
- Field range # 8 is defined from 4 to 63, Increment 1
- Field range # 9 is defined from 1 to 4, Increment 3
- Field range # 10 is defined from 2 to 5, Increment 3
- Field range # 11 is defined from 3 to 6, Increment 3

Time Field Type

The **Time** field type is used to include specific times in your report. **Time** fields are relative to the reference time.

➤ **To activate the Time field:**

In the *Field Definition* dialog, activate the **Time** button. The *Time Field Definition* dialog is displayed:



Specify the time, in hours and minutes, that is to be subtracted from the reference time in order to obtain the time value that is to appear in the field.

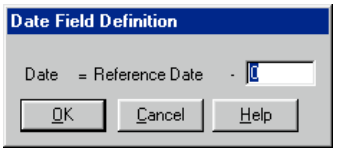
Note: The reference time will be the time the report was generated from (current), unless otherwise specified in the command that activates the report.

Date Field Type

The **Date** field type is used to include specific dates in your report. All dates are relative to the reference date.

➤ **To activate the Date field:**

In the *Field Definition* dialog, activate the **Date** button. The *Date Field Definition* dialog is displayed:



Specify the amount of days to be subtracted from the reference date in order to obtain the date value that is to appear in the field.

Note: The reference time will be the time the report was generated (current), unless otherwise specified in the command that activates the report.

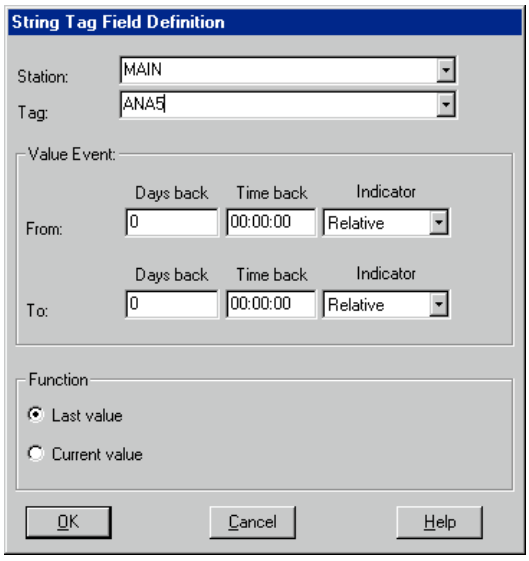
String Tag Field Type

The **String Tag** field enables predefined tag string values to appear in the report.

Note: To use this field type, the tag associated with this field must have been defined in the Tag Definition procedure as a String Tag, as described in Chapter 7, Tags.

➤ **To activate the String Tag field:**

In the *Field Definition* dialog, activate the **String Tag** button. The *String Tag Field Definition* dialog is displayed:



The following options are available:

Station — Specifies the station to which the tag belongs.

Tag — Specifies the name of the string tag with which the field will be associated.

Value Event — Specifies the period of time from which the values of the string tag will be analyzed. The following options are available:

From: Specifies the beginning of the period

To: Specifies the end of the period.

Indicator: Defines the date and time for the beginning and end of the period for which the tag values will be analyzed. Click inside the field to display the following options:

Absolute: The exact time that you specify. For example, if you specified the date 08-05-99, and the time 15:00:00, the value will be recorded at 3 PM on August 5, 1997.

Relative: The time and date that you specify will be relative to the current time and date. For example, for time 10:00:00 and date 3, the value will be recorded at 3 days and 10 hours ago.

Relative Date: This means that only the date that you specify will be relative to the current date (the time will remain absolute). For example, for time 10:00:00 and date 3, the value will be recorded at 3 days ago, 10 AM.

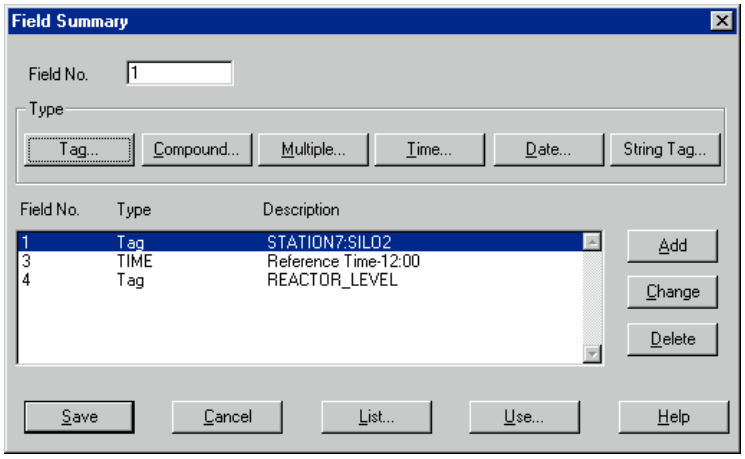
Last Value Displays the last value of the string tag from the period of time specified.

Current Value Displays the current value of the string tag. This is its value at runtime irrespective of the period of time specified for the field.

The **Field Summary** is a User-Defined Report utility that enables you to obtain a complete list of all the defined fields in your report. The list of fields is displayed in a dialog that can also be used to add, change, and delete field definitions online.

➤ **To invoke the Field Summary utility:**

From the *Report Definition* dialog, displayed on page 20-4, activate the **Summary** button. The *Field Summary* dialog is displayed:



The following options are available:

Field No. Contains the current ordinal number of the field that you want to add, modify, or delete.

Type Displays the tag type buttons which, when activated, display the relevant tag type dialog as explained in pages 20-11 through 20-30.

List Generates a list of report fields, as described on page 20-34.

Use Report lists can be used for replacing or appending current field definitions, as described on page 20-35.

- To delete a field from the list:

  Select the field you want to delete from the list and activate the **Delete** button. Do not delete any fields that appear in the report currently displayed in the *Report Definition* dialog. If you do, you will be unable to generate the report properly.

- To change a field definition:

  1. Select the field you want to change from the list and activate the relevant field type button. The field type dialog is displayed:
  2. Modify the field definition and activate the **Change** button.

- To add a new field to the report:

  1. In the **Field No**. field, enter a new field number and activate the relevant field type button. The *Tag Type* dialog is displayed.
  2. Define the tag type (for more details refer to pages 20-11 through 20-30) and activate the **Add** button. The new field is displayed in the list.
  3. Activate the **Save** button to save your definitions and to close the dialog.

After defining frames, fields and field codes, save your definitions.

➤ **To save report definitions:**

Activate the **Save** button in the *Report Definition* dialog, as shown on page 20-4.

The report is saved in two parts as follows:

- *.rpt which contains the report frame.
- *.rpd which contains the field data.

If you entered a field in the report frame, but did not define that field, when you activate the **Save** button, an error message appears and a file called REPxxxxx.MIS is generated (where xxxxx is the name of the report you are saving). This file contains the numbers of all the fields that were not defined, and can be viewed using any text editor.

You can save your definitions in a file with a name that you specify. The field definitions can then be used for other report definitions .

➤ **To name the report definitions file:**

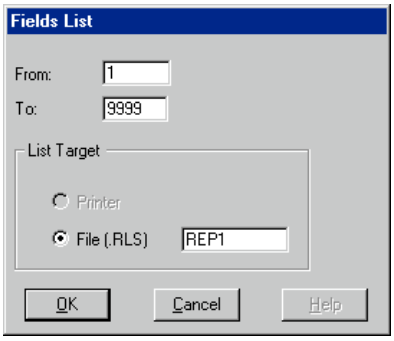
Activate the **Save As** button. A dialog appears in which you specify the name of the file. The field definitions that you save can then be used for other report definitions.

Generating a List of Report Fields

Report lists can be generated and then edited using any text editor. Editing a report list is described in more detail on page 20-35.

➤ **To generate a list of report fields:**

Activate the **List** button in the *Field Summary* dialog, as shown on page 20-31. The *Fields List* dialog is displayed:



The *Fields List* dialog contains a **From To** field filter option. The filter determines which fields will appear in the list generated. Specify the list file name for the desired target file. The default suffix .RLS will be automatically attached to the file name you specified.

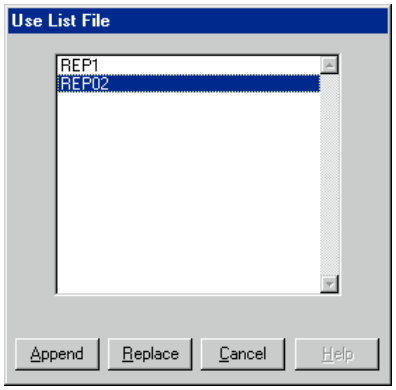
The output of the list is a text file which includes all the fields requested in the field range (each line describes a field). The format of the list lines is fixed, that is the position of each item in a line is important and should not be changed. Each line that begins with a semi-colon is treated as a comment line and will be ignored when the file is used.

Using a List

Report lists can be used for replacing or appending current field definitions.

➤ **To replace or append the current field definitions:**

Activate the **Use** button in the *Report Summary* dialog. From the Use List File listbox select an RLS file and activate the **Replace** button or the **Append** button. (Replace and Append follow the same behavior as Adding a field). The *Use List* dialog is displayed:



List File Editing Recommendations

When editing the list file with a text editor, it is recommended to bear a few things in mind:

The columns for each line (field definition) are static and their location should not be changed. The recommended way to use the list is to generate a list and then edit it (as opposed to creating the file fresh form the start).

The field numbers in the list are fixed, that means they represent real field numbers and will be entered in the listbox as such. For example, if you define in the list fields 1 followed by field 5, the fields will be entered and treated as field numbers 1 and 5. The only limitation for field numbers is that they must be in increasing order.

Error Detection

If an error exists in the .RLS file (incorrect syntax), when a file is being loaded a message specifying the line and column in which the error occurred is issued.

An error is either a missing or incorrect item which prevents a field from being defined properly.

Note: If the tags you specified in the list are not defined in your application, the field is treated as a legal field and no message is issued.

After the report is defined and saved, it can be generated in two ways:

- by a command at the command line, as described below.
- by command in Wizcon Language, as described on the following page.

Command Line Report Generation

After the report is defined and saved, it can be generated by typing the REP command at the command line, as follows:

```
REP repname rd rt st et of sd ed
```

where:

- RD sets the reference date, used by Date type fields. 0 is the current day, 7 is the previous week.
- RT is the reference time, used by Time type fields. This is the number of minutes that elapsed since midnight, between 0 and 1439. Thus, 8 AM would be 480.
- ST and ET are Start Time and End Time, and are only for the time in Tag type fields for which you selected the **Given at Run Time** option. Specify the number of minutes that elapsed since midnight.
- OF is for Output File. Specify the filename or device to which the report will be sent.
- SD and ED stand for Start Date and End Date respectively, and are used with Tag type fields for which you selected the **Given at Run Time** option. These parameters are optional.
- The RD, RT, ST and ET parameters are optional. In order to leave them empty, type an X at their location in the REP command.

Wizcon Language Report Generation

In addition to using the REP command at the command line, reports can be generated by Wizcon Language as follows:

- Short Format

  ```
  REPORT "xxxxx"
  ```

  where *xxxxx* is a report name of up to 5 characters.

  Tag names can be included in the REPORT command as variables. This can be useful to generate a series of reports with a single command. For example, if you want to generate ten reports, REP0 to REP9, you would define a dummy tag called repno, and write the following command sequence:

  ```
  IF      @repno > 0
  THEN    @repno = @repno - 1;
  REPORT "REP" @repno
  ```

- Full Format

  The full format of the REPORT command, with optional report variables, is:

  ```
  REPORT "xxxxx rd rt st et of sd ed"
  ```

  where the parameters are as defined above.

Examples

The following are examples using the REP command:

Example 1:

```
REPORT "REP4 2 360 0 360 LPT2"
```

This command would create a report in a format defined as REP4, with a reference date of 2 days before, a reference time of 6 AM, midnight as the default start time for tag fields, 6 AM as the default end time, and the report would be output to printer 2.

Example 2:

If you want to leave optional variables empty, type an *x* at their location in the REPORT command. Wizcon will use the default value 0 for all the variables except *OF* (Output File), for which the default is LPT1. If you want the report to be sent to the printer, do not type anything (typing **x** would cause the report to be sent to a file called *x*).

For example, the command

```
REPORT "REP1 x x x x REP1.LST"
```

would generate a report in the format defined as REP1 and output that report to a file called REP1.LST.

Chapter 21
Macros

Macros can be invoked from local server only.

About this chapter:

This chapter describes the use of macros in the Wizcon system as follows:

Overview, on the following page, describes an overview of Wizcon macros.

Basic Concepts, page 21-4, describes basic concepts of macros.

Macro Definition, page 21-5, describes how to define action macros and special action macros, shell command macros, program macros, and DDE command macros.

Modifying Macros, page 21-18, describes how to edit macro definitions.

Menu ⇨ Design / Macros

Macros are special shortcuts that can be used to execute pre-defined actions, commands, or programs, whenever designated keys or key combinations are activated. This enhances overall Wizcon functionality, and saves you the time and effort of having to execute Wizcon operations in several stages.

You can define up to 1024 Wizcon macros.

Wizcon macros are defined by the following attributes:

- Special accelerator keys that invoke the macros (F1 to F12, A to Z, ALT alone, or in combination with Ctrl, Shift, and others).
- A unique name and description.
- Authorization groups.
- Confirm before Execute option.

Wizcon macros include the following types:

- Actions, as described on page 21-9.
- Commands, as described on page 21-13.
- Programs, as described on page 21-14.
- DDE Command Macros, as described on page 21-16.
- Trigger Macros, as described in the section called *Trigger Objects* in *Chapter 12, Image Editor*.

It is important to remember that macros will only be executed:

- If a Wizcon window, including the Wizcon Application Studio, or the *Single Tag Input* dialog, is the active window. If any other window is active, such as an application other than Wizcon or a different Wizcon dialog, and you invoke a macro, the macro will not be executed.
- When Wizcon is used locally. For example, if a trigger macros is invoked through a web browser, it will not be executed.

The following section describes a definition of a macro file.

Macro File

In Wizcon, all saved macros are written to a special file called *wizmacro.dat*. This is an ASCII file that you can edit.

In the wizmacro.dat file, the title line in the file must always be the current version number. Then, each macro included in the file must have the following lines:

- The first line for each macro includes the following data:

  Macro number, type (**A** for Action, **P** for Program, **C** for Command), name, accelerator keys, confirmation (**Y** for yes, **N** for no), authorization.

- The next line is the description of the macro.

  The last line includes specific macro data. For Action macros, name and parameters; for Commands, the shell command; for Programs, the macros included in the Program (separated by commas).

You can define Action, Command, Program macros from the *Macro Definition* dialog.

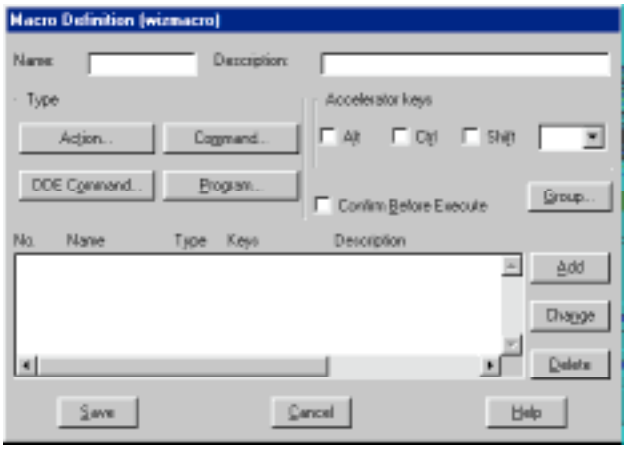
Note: You may want to refer to the Getting Started guide to see how to define a macro in more detail.

➤ **To define macros:**

In the Control Panel of the Wizcon Application Studio, double-click the **Macros** icon.

Or,

From the *Design* menu in the Wizcon Application Studio, select **Macros**. The *Macro Definition* dialog is displayed:



The following options are available:

Name — Specifies the name of the macro (8 characters maximum).

Description — Specifies a brief description of the macro (20 characters maximum).

Type — Specifies the type of macro that can be defined in this dialog. Activate one of the following buttons to define a specific macro:

Actions: Single Wizcon operations, as described on page 21-9.

Command: Shell commands, as described on page 21-13.

Program: Any number of macros that act as one macro, as described on page 21-14.

DDE Command: Execute commands in other DDE-compatible applications, as described on page 21-16.

Accelerator keys — Specifies the keys that invoke the macros F1 to F12, A to Z, ALT alone, or in combination with Ctrl, Shift, and others). Please refrain from using standard Windows accelerator keys such as Ctrl S, Ctrl P, or F1, and F3 since they are intended for other purposes.

Confirm Before Execute

Enables Wizcon to prompt you to confirm the execution of a macro before it is executed.

Group — Used to assign groups to macro authorization.

Activate the **Add** button to add the macro to the list of macros. You can continue defining macros or you can activate the **Save** button to save your definitions and exit the dialog.

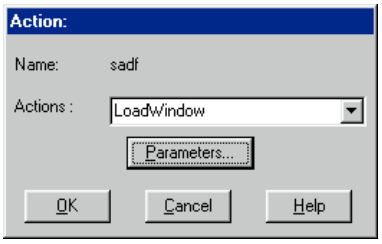
Defining Action Macros

Defining action macros includes defining the action macro, as described below, and defining special action parameters, as described on the following page.

Defining action macros is performed from the *Macro Definition* dialog. To access the dialog see page 21-5.

➤ **To define an Action macro:**

From the *Macro Definition* dialog, activate the **Action** button. The *Action* dialog is displayed:

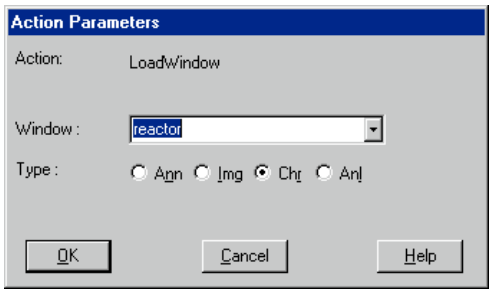


The following options are available:

Name	Specifies the macro name of an existing macro.
Actions	Specifies the action to be invoked by this macro. To view a list of predefined actions, click the arrow to the right of the field. These actions are described in more detail, on page 21-9.
Parameters	Specifies parameter information, as described on the following page.

- To define special action parameters:

  Activate the **Parameters** button. The *Action Parameters* dialog is displayed:



  The fields in this dialog are different for each action you select. In the dialog shown above, the **LoadWindow** action features the following fields:

  Window Click the arrow to the right of the field and select a window layout.

  Type Select one of the following to specify the window type.

  Ann: Events Summary

  Img: Image

  Chr: Chart

  Anl: History Viewer

Clicking **OK** saves your definitions and closes this dialog, displaying the *Macro Definitions* dialog in which you can activate the **Add** button to add the macro to the list of macros.

Actions

This section describes the actions available in the **Actions** field of the *Action* dialog displayed on page 21-7.

Action	Parameters	Description
LoadWindow	**Window**, **Type**: Ann, Img,Chr, Anl.	Loads the specified window. If a window with the specified name already exists, this macro will not be executed.
CloseWindow	**Window**, **Type**: Ann, Img, Chr, Anl.	Closes the specified window. If no window with the name and type you specified is open on the screen, no operation will be executed.
SwitchToWindow	**Window**, **Type**: Ann, Img, Chr, Anl.	Closes the specified window. If no window with the name and type you specified is open on the screen, no operation will be executed.
SaveWindow	**Window**, **Type**: Ann, Img, Chr, Anl	Saves the specified window. If no window with the name and type you specified is open on the screen, no operation will be executed.
SwitchToManager	**None**	Specifies the Wizcon Application Studio to be the active window.
LoadLayout	**Layout**	Loads the specified layout. If no such layout appears on the screen or is already loaded, no operation is executed.

Action	Parameters	Description
LoadLayout	**Layout**	Loads the specified layout. If no such layout appears on the screen or is already loaded, no operation is executed.
LoadImage	**Window**, **Image**, **Zone**	Loads the specified image and zone. If you did not specify a zone, or if no such zone is defined for that image, the image will be loaded in the zone it was in when it was last saved. If the image or window you specified does not exist, no operation will be executed.
GoToZone	**Window**, **Zone**	Moves the image in the specified window to the specified zone. If there is no such zone or window, no operation will be executed.
LoadRecipe	**Recipe**	Loads the specified recipe. Enter the full recipe name, prefix and extension in the **Recipe** field. If no such recipe exists, no operation will be executed.
SaveRecipe	**Recipe**, **Description**	Updates the tag values in the recipe to the values that Wizcon reads from the PLCs.

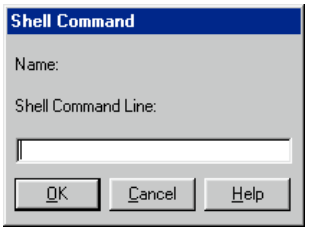
Action	Parameters	Description
TagAssignment	**Tag**, **Expression**	Applies the results of the specified expression to the specified tag. The macro writes the nearest value, upper/lower, to the tag. If the calculated value is out of range, then the nearest limit is written to the tag. In the **Expression** field use the following formats: **Operand Operator Operand** or **Operand**. Where Operand is any constant value, @tagname, or @ for the tag you specified in the **Tag** field. Operator can be *, /, +, -, or % (mod). In the **Tag** field, select a tag from the list of existing tags by clicking on the arrow to the right of the field.
PlaySound		Enables playing a *.WAV* file in asynchronous way. The only parameter needed for this macro is the sound files name (*.WAV*). Note that the combo box is not filled and the user must enter a full path for the requested file.

User Login		Allows the user to define a macro which will cause the login dialog to open. Wizcon opens the dialog and applies the user's actions exactly the same way it does whenever the dialog is opened from Wizcon's Quick Access Bar. The common macro running conditions and restrictions are applied to the discussed macro. This macro does not have any parameter.
SelectLanguage		Allows the user to select a language. The macro opens the same dialog that is opened from the Studio. This macro does not have any parameter.
PrintChart		Enables the printing of predefined Chart Windows. The parameter is a Chart Window name. The chart will be printed without being displayed on the screen. Note that only historical charts can be printed if they are not displayed. An error message will be issued (error code 621) if attempting to print in-line chart using this macro and the chart is not loaded.
DirectLogin	**User Name and Password**	Allows the user to define a macro that will enable direct login, without opening the Login User's dialog.
ExitApplication		Allows the user to define a macro that will enable the user to exit an application easily. This macro does not have any parameters.

Defining command macros is performed from the *Macro Definition* dialog, as described on page 21-5.

➤ **To define a Shell command macro:**

In the *Macro Definition* dialog, activate the **Command** button. The *Shell Command* dialog is displayed:



The following options are available:

Name — Specifies the macro name specified in the *Macro Definition* dialog.

Shell Command Line — Specifies the shell command that is to be executed whenever this macro is invoked. Wizcon executes this command using the standard Windows **Start** command. You can use any of the **Start** parameters. For more about the **Start** command, refer to the Windows Help.

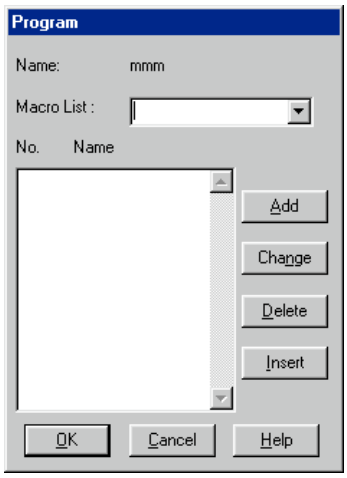
Clicking **OK** saves your definitions and closes this dialog, displaying the *Macro Definitions* dialog where you can activate the **Add** button to add the macro to the list of macros.

Defining Program Macros

Program macros are macros that are composed of several other existing macros. You can define Program macros when one or more macros of any type, already exist. Defining program macros is performed from the *Macro Definition* dialog as described on page 21-5.

➤ **To define Program macros:**

In the *Macro Definition* dialog, activate the **Program** button. The *Program* dialog is displayed:



The following options are available:

Name — Specifies the macro name that you specified in the *Macro Definition* dialog.

Macro List — Specifies the macro that will be included in the program. Click on the arrow to the right of the field to display a list of macros.

Program List Specifies the list of macros that you selected to be included in the program.

- To add a macro to the list:

  Activate the **Add** button after specifying your definitions.

- To add a macro to the list before the currently selected macro:

  Activate the **Insert** button.

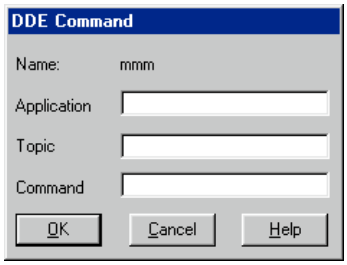
Clicking **OK** saves your definitions and closes this dialog, displaying the *Macro Definitions* dialog where you can activate the **Add** button to add the macro to the list of macros.

Defining the DDE Command Macro

Using the DDE Command macro you can create a macro that enables you to execute commands from any applications that support the Command part of the DDE protocol. Usually, these applications include a predefined set of supported commands, which are listed in the applications' documentation. Defining DDE Command macros is performed from the *Macro Definition* dialog as described on page 21-5.

➤ **To define DDE Commands:**

In the *Macro Definition* dialog, activate the **DDE Command** button. The *DDE Command* dialog is displayed.



The following options are available:

Name — Specifies the macro name that you specified in the *Macro Definition* dialog.

Application — Specifies the name of the DDE-compatible application in which you want to execute the command.

Topic — Specifies the name of the topic on the server. The server's documentation must specify what the topic should be for its supported DDE commands.

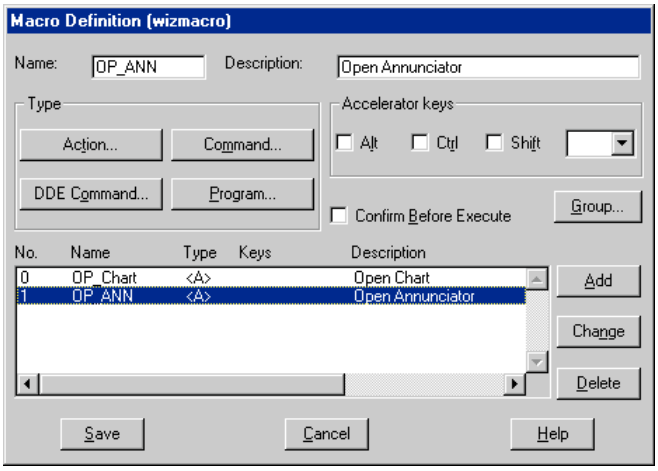
Command Specifies the command string that you want to execute. Make sure that the application recognizes the syntax of the command. You can also include command tokens and receive their current values when you execute the commands. For example, the current value of the $time token can be 1:00pm. The command tokens are similar to the alarm tokens which are listed in *Chapter 8, Alarms*.

Clicking **OK** saves your definitions and closes this dialog, displaying the *Macro Definitions* dialog where you can activate the **Add** button to add the macro to the list of macros.

You can modify Action, Command, Program macros from the *Macro Definition* dialog.

➤ **To modify macros:**

1. From the *Design* menu in the Wizcon Application Studio, select **Macros**. The *Macro Definition* dialog is displayed with a list of the defined macros, as shown in the following dialog:



2. Select the macro you want to modify, make the changes you require and activate the **Change** button.

Chapter 22
Wizcon DDE Support

About this chapter:

This chapter describes how to use the Wizcon system as a DDE client or server, as follows:

Overview, on the following page, describes an overview of DDE clients and servers.

DDE Address, page 22-3, describes the DDE Address, DDE transactions, and Wizcon DDE Overview.

Using Wizcon as a DDE Client, page 22-6, describes when to use WizDDE as a client.

WizDDE Client Definition, page 22-7, describes how to define Wizcon as a DDE client and how to specify DDE addresses for tags.

WizDDE Client Block, page 22-10, describes how to define and modify DDE client blocks.

DDE Command, page 22-15, describes DDE commands.

Activating the WizDDE Client (WIZDDEC), page 22-16, describes how to run the WIZDDEC module.

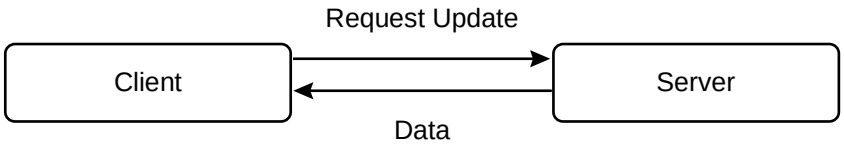
WizDDE Server (WIZDDES), page 22-18, describes when to use and how to define Wizcon as a DDE server, how to specify a DDE address in the client application and activate WIZDDES.

Excel to Wizcon Data Transfer, page 22-22, describes how to send data from Excel to Wizcon.

Wizcon Macro From Client, page 22-24, describes how to activate Wizcon macros from DDE client applications.

The Dynamic Data Exchange (DDE) is a protocol that enables unrelated software programs to exchange data. Any software that supports the DDE protocol can *talk* with other programs that support the protocol, regardless of differences between the applications. When Wizcon passes tag values to an Application Module, it does not use DDE, but when Wizcon and Excel exchange information, they must use DDE.

When applications exchange data using DDE, one is called the *client* application and the other the *server* application, as shown in the diagram below. The basic distinction is that the client application receives data from the server. Another difference is that the client always specifies what data is to be transferred. The DDE client specifies the data items to be exchanged by using a standard syntax called a *DDE Address*.



DDE Address

Before two applications can exchange information, the client application must specify the data items it wants to receive by using DDE Addresses. Remember that even though the data items reside in the server application, the DDE Address is always specified in the client application. The DDE Address consists of three parts:

- **Application**, that defines the name of the application you want to communicate with.
- **Topic**, that defines the data you want to process.
- **Item name**, that defines a unit of data (it can also be a file).

A program acting as a DDE server requires a client to define DDE Addresses in a specific manner.

Note: Consult the relevant documentation of the server application to see how to define the DDE Address in the client application. Remember that the DDE Address is defined in the client application for accessing data in the server.

A common example is a client application receiving updated data from Excel. Excel documentation states that a client must define the DDE Address as follows in order to receive data updates:

Application	EXCEL
Topic	FileName/Sheet [e.g. BOOK1.XLS / SHEET1]
Item name	Row#Column# [e.g. R1C1]

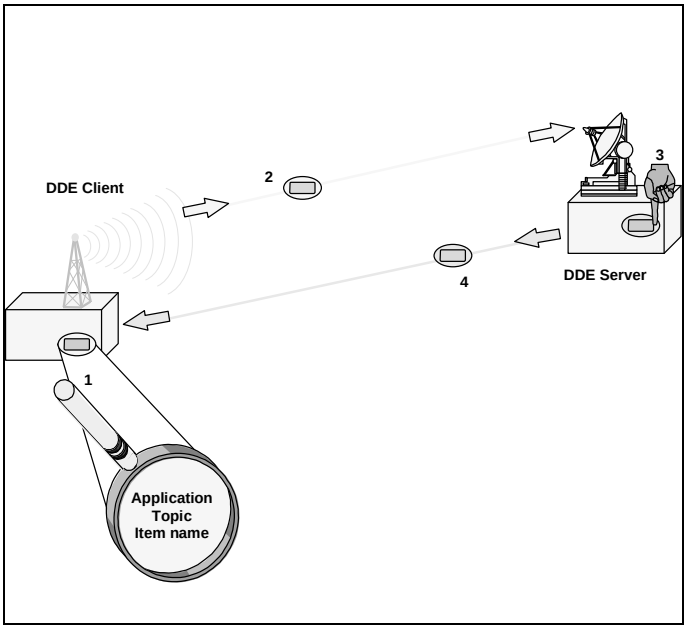
Excel is a good example of why you need to read the server application documentation in order to properly define DDE Addresses from client applications. The Excel **Item name** specified above is valid for the English language version, but differs in other language versions of Excel.

Client applications wishing to access tag values in Wizcon, must define their DDE Addresses as follows:

Application	WIZCON
Topic	TAG
Item name	TagName *or* StationName:TagName. For example, VIEW01:ANA01.

DDE Transactions

Two DDE-compatible applications can exchange data in four steps, as shown in the following diagram:



1. A DDE Address is defined in the client application.
2. The client sends the DDE Address in a request to the server for data updates.

3. The server identifies the requested data by the DDE Address sent by the client.
4. When the requested data item changes, the server updates the client.

Wizcon DDE Overview

Wizcon supports DDE both as a client and a server (this means that it can receive data as a DDE client and send data as a DDE server provided the partner application supports DDE). Wizcon DDE support is provided by two programs:

WIZDDEC: Enables your Wizcon application to run as a DDE client and receive information from server applications, as described on the following page. Using WIZDEC, you can:

- Update tags with values received from a server application. The new tag values are incorporated on-line into images, charts, reports, alarms, historical databases, and PLCs.
- From Wizcon, execute DDE commands in server applications with parameters defined in Wizcon.

WIZDDES: Enables you to run your application as a DDE server, as described on page 22-19. Using WIZDDES, you can:

- Transmit real-time tag values to external applications such as spreadsheets, databases, batch programs, and many others.
- Run any Wizcon macro from a DDE client application.

Note: Both programs can run simultaneously to transform Wizcon into a DDE client and server at the same time. This is common in configurations in which a Wizcon application receives data updates from one program and sends data updates to another.

The WIZDDEC program enables your Wizcon application to run as a DDE client and receive information from server applications.

Whenever Wizcon receives frequent data updates from another program, set your Wizcon application as a DDE Client. For instance, a program may read values from a field device and have to update Wizcon with data changes. In this case, you need to configure Wizcon as a DDE Client with all the necessary DDE Addresses in order to receive updates from the other program.

In addition to processing data received from DDE servers, the WIZDDEC also supports the DDE poke (one-shot send) mechanism. If a tag value changes in Wizcon and this tag has a DDE Address, then WIZDDEC will poke the tag value to the DDE server. This feature exists to maintain data consistency between Wizcon and the DDE server application. However, the WIZDDEC poke does not transform Wizcon into a DDE server and is not meant for transmitting data on a large scale.

If your configuration requires Wizcon to frequently update another program (the other program would be a DDE client) with tag values, do not define DDE Addresses for these specific tags in order to use WIZDDEC. This will abuse the poke mechanism and result in inefficient data transfer. In such a case, you must configure Wizcon as a DDE server, which is explained on page 22-18.

This section describes the following:

- Defining Wizcon to run as a DDE client, as described below.
- Specifying a DDE address for tags so that Wizcon updates the tag values it received from DDE server application, as described on page 22-8.

➤ **To define Wizcon to run as a DDE client:**

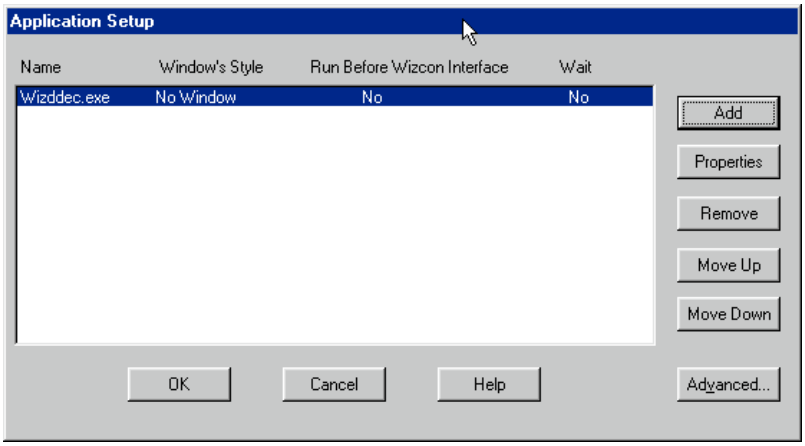
1. In the Control Panel of the Wizcon Application Studio, double-click the **Application Setup** icon.

   or,

   From the *Design* menu, select **Application Setup**. The *Application Setup* dialog is displayed.

2. Activate the **Add** button. The *Programs Specifications* dialog is displayed.
3. Press **Browse** and locate the Wizddec.exe file in the Wizcon/Bin directory.
4. Select the file and click **Open.** The file name appears in the *Programs Specification* dialog.

5. Click **OK** to save your definition and to close the dialog. The *Application Setup* dialog appears as follows:



6. Click **OK** to save your definitions and close the dialog.

Note: For more details about adding programs to run with Wizcon, refer to the section on Application Setup in Chapter 5, Getting to Know the Application Studio.

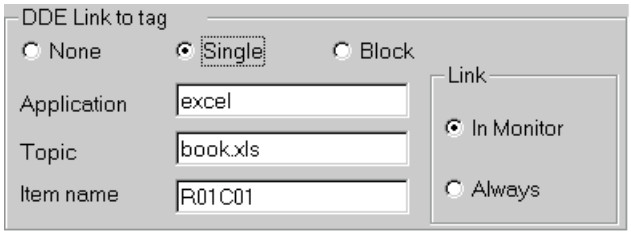
Specifying a DDE Address for Tags

When you want Wizcon to update the tag values it receives from a DDE server application, you must specify a DDE address for such tags.

➤ **To specify a DDE Address:**

Access the *Tag Definition* dialog, select the **DDE Link** tab, and select the **Single** option. This is described in detail in the *Communicating Online with Other Applications* section of *Chapter 7, Tags.* The **DDE Link to tag** parameters are displayed.

Following is an example of Excel as a DDE server application.



The following options are available:

Application — Specifies the name of the DDE server from which the WizDDE Client will receive updates. Often the name of the software serves as the Application.

Topic — Specifies the name of the group of data or files on the DDE Server that will be accessed.

Item name — Specifies the data item on which updates are requested.

Link — Enables you to define the DDE Link as: **Always** linked to the DDE server, or **In Monitor**. When selecting **Always**, every change will be passed by WIZDDEC to WizPro, even if the tag is not **In Monitor**.

The WizDDE Client Block mechanism enables Wizcon to receive many tag values from the server in one update message. This improves the communication between Wizcon and the DDE server. The WizDDE Client Block is built from a matrix of rows and columns in which each cell of the matrix contains the value of one data item.

Note: Not all programs support block message. Please check the documentation of the DDE server application.

A common use for DDE client blocks is a setup in which a DDE server updates, at once, a block of items that make up a recipe. Wizcon, the client, receives all the items, and the tag values are changed at once.

Define DDE client blocks only if data items in the server change simultaneously (within milliseconds). Wizcon receives the whole block of data whenever one of the items in the block changes. Therefore, if items change one at a time, Wizcon will receive a whole block of values, many of which have not changed.

DDE Client Blocks Definition and Modification

Menu ⇨ Design / DDE Blocks

Using DDE blocks in Wizcon involves two steps:

- Defining the DDE client blocks.
- Connecting the tags to the relevant blocks in the **DDE Link** tab of the *Tag Definition* dialog, as explained on page 22-13.

A DDE block in Wizcon is composed of an internal name, block address, and block dimension. The internal name is used to connect a tag to a block.

DDE blocks are created and modified in the *DDE Client Block Definition* dialog. This dialog is invoked from the Wizcon Application Studio.

➤ **To define/modify DDE Client Blocks:**

1. In the Control Panel of the Wizcon Application Studio, double-click the **DDE Blocks** icon.

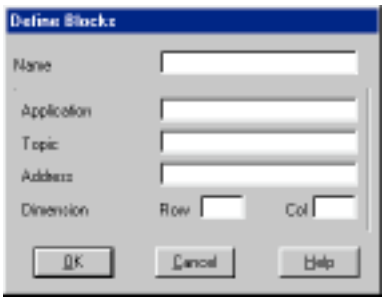
   or,

   From the *Design* menu of the Wizcon Application Studio, select **DDE Blocks**. The *DDE Client Block Definition* dialog is displayed:

   - To create a new DDE block, follow the instructions in 2, 3 and 4 below.
   - To modify a DDE block, double-click the block, or select the block and activate the **Change** button. The *Define Blocks* dialog is displayed, on the following page, in which you can make the necessary changes.

2. In the **Block Name** field, enter an internal block name.
3. In the **Application** field, specify the DDE server application where each block physically resides.

4. Activate the **Add** button. The *Define Blocks* dialog is displayed. Define the block and click **OK** to save your definitions and close the dialog.



The following options are available:

Name — Specifies the internal name of the block. For example, BLOCK1.

Application — Specifies the DDE server application. For example, EXCEL.

Topic — Specifies the name of the group of data or files on the DDE Server that will be accessed. For example, Book1.xls.

Address — Specifies the block address. For example, DDE clients of Excel must specify the block address as follows:
`Upper Left Cell: Bottom Right Cell`.
The DDE block starts at the cell in Row2/Column3 and ends with the cell in Row6/Column9. Therefore, the block covers five cells vertically (rows) and seven cells horizontally (columns). Therefore, the entry will be R2C3:R6C9.

Dimension — The number of rows and columns in the block. This is worked out from the address.

After defining blocks, individual tags can be connected to elements in the block, as described below.

Connecting Tags to One Item in a DDE Block

When you want to connect a tag to one item in a DDE block, you must specify a DDE address for the tag.

➤ **To specify a DDE Address:**

Access the *Tag Definition* dialog select the **DDE Link** tab, and select the **Block** option. This is described in detail in the *Communicating Online with Other Applications* section of *Chapter 7, Tags*. The **DDE Link to tag** parameters are displayed. Following is an example using Excel.

The following options are available:

Block Name	Specifies the block to which the tag will belong.
Row	Specifies the row number of the item in the block relative to the start position. The start position appears in the **Address** field of the *Define Blocks* dialog, shown on the previous page.
Column	Specifies the column number of the item in the block relative to the start position.
Link	Enables you to define the DDE Link as: **Always** linked to the DDE server or **In Monitor**. When selecting **Always**, every change will be passed by WIZDDEC to WizPro, even if the tag is not **In Monitor**.

DDE Command

A DDE command is a command that the DDE client sends to the DDE server and is executed in the server application. Note that not all the applications support DDE commands even though they may support DDE communication. You must check the documentation of each software to see if this feature is supported.

It is very important to remember that DDE commands are sent by the client and executed in the server**.**

Applications that support DDE commands include a predefined set of commands that can be received from a client application. These commands should be listed in the server applications' documentation.

DDE commands that Wizcon sends to a DDE server are defined as macros in Wizcon. Refer to the section on *Defining the DDE Command Macro*, in *Chapter 21, Macros*, for more details about defining DDE commands.

In order for the WizDDE to establish contact with the DDE server application, the server must be loaded before WizDDE. For example, if your Wizcon application receives data from Excel (the DDE server), you must first load Excel before loading the WizDDE.

To enable your Wizcon application as a DDE client, you must run the WIZDDEC module.

➤ **To run the WIZDDEC module:**

Click the **Start** button and point to **Programs**. A popup menu is displayed. Point to Wizcon and select **DDE Client** from the popup menu.

Important WizDDE Client Notes

Things to know about WizDDEC:

- Load the application program that is the server before the client is loaded.

  In order for the WizDDE to establish contact with the DDE server application, the server must be loaded before WizDDE. For example, if your Wizcon application receives data from Excel (the DDE server), you must first load Excel before loading WizDDE.

- If the DDE server application was **not loaded** prior to the WizDDE, or was closed and then reloaded, you must do one of the following to establish communication:

  Restart WizDDEC.

  or,

  If a DDE tag is displayed in a *Single Tag Input* dialog or image, close the dialog, or image and reopen it. Restart the DDE Client to restore communication and reopen the tags. If no DDE tag is visible, simply display the tag in a *Single Tag Input* dialog and communication will be restored.

WizDDE Server (WIZDDES)

WIZDDES is used to run your application as a DDE server.

This section describes the following:

- When to use Wizcon as a DDE server, as described below.
- Defining Wizcon to run as a DDE server, as on page 22-19.
- Specifying a DDE address in the client application, as described on page 22-20
- Activating the WizDDE server (WIZDDES), as described on page 22-21.

Using Wizcon as a DDE Server

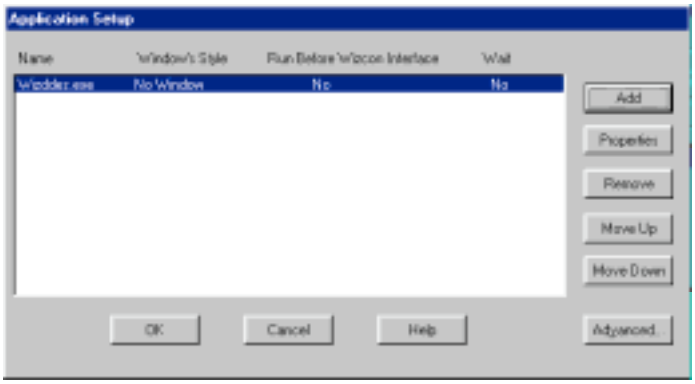
Your Wizcon application should run on a DDE Server when Wizcon has to send tag values to another program. A common example of this configuration is a Wizcon application, and a spreadsheet program that receives tag values from Wizcon and displays them in a pie-chart.

If your Wizcon application sends frequent tag value changes to a client program, then it is imperative that Wizcon serves as a DDE server and not as a DDE client that abuses the poke mechanism. The poke mechanism is described in detail in the previous section.

Defining Wizcon to run as a DDE Server

➤ **To define Wizcon to run as a DDE server:**

1. In the Control Panel of the Wizcon Application Studio, click the **Application Setup button.** The *Application Setup* dialog is displayed.
2. Activate the **Add** button. The *Programs Specifications* dialog is displayed.
3. Press **Browse** and locate the Wizddes.exe file in the Wizcon/Bin directory.
4. Select the file and click **Open.** The file name appears in the *Programs Specification* dialog.
5. Click **OK** to save your definition and to close the dialog. The *Application Setup* dialog appears as follows:



6. Click **OK** to save your definitions and close the dialog.
7. Run Excel or any other application program to serve as the client.

Note: For more details about adding programs to run with Wizcon, refer to the section on Application Setup in Chapter 5, Getting to Know the Application Studio.

Note:

- The WizDDE Server can support *only one client application*. If a WizDDE Server communicates with a client and another application establishes contact with Wizcon, the link between Wizcon and the first client will be terminated.
- If a real tag gets a communication error, then asterisks (*********) are sent to the DDE client.

Specifying a DDE Address

The DDE address is always defined in the client application. When Wizcon serves a DDE server, the DDE addresses must be defined in the application that will request tag value updates from Wizcon. The client must define the DDE Addresses with the three standard components: *Application*, *Topic*, and *Item Name*.

Client applications wishing to receive tag values in Wizcon must define their DDE Addresses as such:

Application	Wizcon
Topic	GATE
Item Name	TagName *or* 'StationName:TagName'. For example, A1001 *or* 'VIEW01:ANA01'.

You must read the relevant documentation in the client application to find the syntax for defining DDE Addresses. For example, in Excel, to make a cell a DDE client on the Wizcon tag ANA01, you must specify the following formula for the cell:

```
=WIZCON|TAG!ANAO1.
```

If ANA01 is on a remote station called STAT1, the formula would be:

```
=WIZCON|TAG!'STAT1:ANAO1'.
```

Activating the WizDDE Server (WIZDDES)

TO enable your Wizcon application as a DDE server, you muse run the WIZDDES module.

➤ **To run the WIZDDES module:**

Click the **Start** button on your desktop, point to **Programs**, and then to Wizcon. Select **DDE Server** from the popup menu.

This section describes how to send data from Excel to Wizcon in two steps:

- Defining the DDE link initialization.
- Defining the DDE transfer.

Step 1: Define the DDE Link Initialization

Excel establishes the DDE link with Wizcon. This is performed using the Excel INITIATE( ) function called from a macro sheet. For example:

```
= SET.VALUE (B1, INITIATE (“WIZCON”, “TAG”))
= RETURN ( )
```

In this example, the INITIATE function establishes a DDE link with the Wizcon application and requests the TAG topic from the application. The SET.VALUE( ) function returns the result of the INITIATE function in the B1 cell of the macro sheet.

Step 2: Define the DDE Transfer

After the link between Wizcon and Excel is established, data can be transferred from Excel to Wizcon. In order to define the data transfer, the following macro should be implemented in a macro sheet:

```
= SET.VALUE (B5, POKE (B1,”1N101”,B2)
= RETURN ( )
```

In this macro, the POKE ( ) function is used to transfer a value from the B2 cell to the Wizcon tag called ANA01, through the channel specified in the B1 cell. The SET.VALUE( ) function returns the result of the POKE( ) function to the B5 cell in a macro sheet. TRUE is returned upon success.

Note: These macros specified above are used for definition purposes only. In order to establish a link and transfer data, activate these macros using the Macro/Run option from the Excel Main Menu.

Wizcon Macro From Client

Wizcon macros can be activated from DDE client applications as long as those applications support this part of the DDE protocol. Consult the documentation of the client application to check if this support exists and how it operates.

To activate a Wizcon macro from the client application, the DDE Address for the macro must be defined with the following parameters:

Application	WIZCON
Topic	GATE
Command	MacroName (the name in Wizcon given to the macro to be executed).

Chapter 23
Wizcon Network

About this chapter:

This chapter describes how to design and operate a Wizcon network, as follows:

Overview, on page 23-2, describes an overview of the Wizcon network environment.

Basic Concepts, page 23-3, describes the Wizcon network configurations.

Configuring Wizcon for Networking, page 23-7, describes how to configure Wizcon for networking.

Configuring Wizcon Network Stations, page 23-9, describes how to configure your computer as a SCADA/Network SCADA, Hot Backup and Management View station. It also describes the Wizcon Server station and how to query the status of a station with Wizcon Language.

Recording Remote Data, page 23-18, describes how to record remote tags and alarms. It also describes how to simulate the connection between a remote station that is not running.

Network Properties, page 23-22, describes how to set your network environment to establish maximum Wizcon application performance.

Wizcon TCP/IP Support, page 23-28, describes how to configure your Wizcon network for TCP/IP.

Wizcon Backup - Principles of Operation, page 23-31, describes the backup principles of the backup station and the master station

Failure Detection and Reaction, page 23-33, describes what to do when an error message is received in switch backup mode.

Overview

Wizcon stations operating in a network environment can share objects, such as alarms and tags. Direct access to remote tags and alarms can be implemented through the simple station definition procedure described on page 23-9. Once the station is defined to support Wizcon network activities, any operation involving tags and alarms on a local station can include remote tags and alarms as well.

The Wizcon network system operates in a manner similar to other network systems. WizPro, the Wizcon kernel, handles all network operations and transfers data from/to local and remote Wizcon stations.

Wizcon supports various network components, including Novell Requester, LAN Server and TCP/IP.

Installation in a TCP/IP environment enables Wizcon stations on one network to communicate with Wizcon stations on other networks. Through TCP/IP, the Wizcon Network offers a complete enterprise-wide solution

This section describes the Wizcon network configurations.

Wizcon Station

A general term describing a station that is configured to operate on the Wizcon Network (can be SCADA, BACKUP, VIEW or SERVER).

Wizcon SCADA Station

An operations station that can communicate with up to 16 networks of PLCs simultaneously. This station performs functions such as:

- Sampling PLCs.
- Generating alarms.
- Collecting historical data.
- Performing control operations.

The operator can view the process through the Wizcon user-interface and interact with on-going activities. The Wizcon SCADA station can receive and send data to other network stations.

SCADA station definition is described on page 23-10.

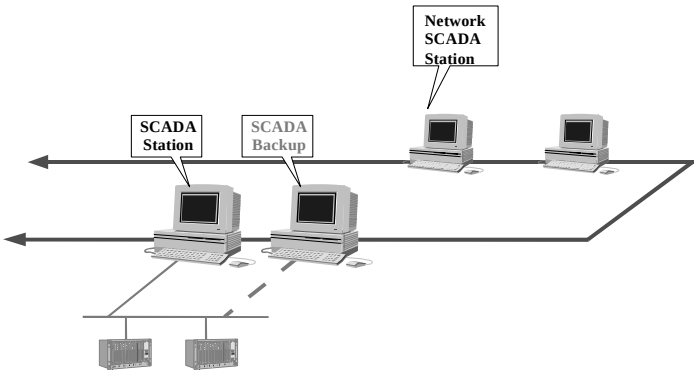
Wizcon Hot Backup Station

For applications that require the highest degree of reliability, Wizcon provides the Hot Backup redundant configuration. This configuration consists of two identical Wizcon SCADA stations. Both stations are connected to the same PLCs, but one station runs in the **Master** mode and samples data in the field, while the second station (Backup station) remains in a **Stand-By** mode. When the Master station goes down, the

Backup station switches to the **Master** mode, starts to sample PLCs and distributes real-time data to other stations across the network.

In addition to real-time redundancy, the Hot Backup feature ensures the integrity of historical databases. After the Master station recovers, the backup station updates the Master station with the missing historical data. This mechanism ensures that the historical database on the Master stations remains complete.

Hot Backup Configuration



Hot Backup station configuration is described on page 23-13.

Wizcon Network SCADA Station

A full operational station that allows operators to view and control the process. This station automatically receives all the online and historical data from the SCADA stations, as required. The operator can transparently interact with the process using Wizcon images, charts and other standard modules. The Wizcon Network SCADA serves as a mirror of the real-time and historical data from one or more SCADA stations. The Network SCADA Station is not connected to a PLC, but to SCADA Stations via a network.
Network SCADA station configuration is described on page 23-10.

Wizcon Server Station

Buffers and redirects data exchange transactions between the Management View stations to the plant in order to isolate and avoid overloading SCADA stations that control the real-time data floor.

The Wizcon Server collects requests from the Management View stations and transfers them to the appropriate SCADA stations. In response to these requests, the Wizcon Server continuously receives updated messages about tags and alarms and dispatches them to the Management View stations.

In addition to routing real-time data, the Wizcon Server can collect data from the SCADA stations and record selected data in historical databases. These databases can reside on the Wizcon Server local disk or on the network file server and are shared among all stations across the network. Since Wizcon stores the data in a common format, users can access this data from both Wizcon stations and other applications without having to deal with format conversion.

This configuration allows users to efficiently distribute computer power among different computers and PLCs, optimizes network resource consumption, and ensures that time-critical missions will be completed without interference.

The Wizcon Server Station configuration is described on page 23-10.

Management View Station

Stations that bring real-time and historical data from the plant floor to any desktop in the organization. Management View stations can display data collected by one or more SCADA stations. In addition to displaying the data in forms of images, graphs and reports, Management View stations provide the necessary functions for interacting with on-going activities. Each command for changing process parameters or downloading a recipe is immediately transferred to the appropriate Wizcon SCADA stations. Since the Wizcon Server handles the communication, this process does not affect time-critical operations on the plant-floor. A Management View Station can not operate without a Server station.

Management View station configuration is described on page 23-16.

Before you define stations for your network, you must first configure Wizcon for networking.

➤ **To configure the Wizcon Network:**

1. Click the **Start** button and point to **Settings**. The *Settings* menu is displayed.
2. Select **Control Panel**. The *Control Panel* window is displayed.
3. Double-click the **Network** icon. The *Network* dialog is displayed.
4. In the *Network* dialog, choose **NetBEUI Protocol** and click the **Properties** button. The *NetBEUI Properties* window is displayed.
5. Select the **Advanced** tab and click the **set this protocol to be the default protocol** check box.

Time Setting Considerations

Start ⇨ Settings ⇨ Control Panel ⇨ Date/Time

It is necessary to synchronize the clocks on your network because the Wizcon timestamp is based on local time according to daylight saving time setting.

Make sure that:

- The Windows settings are identical in all Wizcon stations across the network. This includes Time Zone as well as Daylight Saving Time.
- All network PC clocks are synchronized at all times. It is recommended to use a network utility to periodically synchronize the PC clocks.

- If Wizcon and Wizcon for OS/2 are on the same network, make sure that the Windows time settings in all Wizcon stations are as follows:

  Time Zone - Eastern Time (USA and Canada) - (GMT - 5.00)

  Automatically adjust clock to daylight saving time changes by selecting the **automatically adjust clock for daylight saving changes** option in the **Time Zone** tab. These time settings ensure that the Windows and OS/2 events are synchronized.

Menu ⇨ Network

You can configure your computer as a Wizcon network station, as described below. You can also query the status of a station with Wizcon Language, as described on page 23-17.

➤ **To configure network stations:**

Select the *Network* menu in the Wizcon Application Studio. The following options are available:

Select	To do
Local Station Configuration	Configure your computer as a: SCADA or Network SCADA station, as described on the following page. Hot Backup Station, as described on page 23-13. Management View Station, as described on page 23-16.
Record Remote Data	Record remote tags and alarms, as described on page 23-18. Simulate the connection between a remote station that is not running, as described on page 23-20.
Network Properties	Set your network environment and establish a proper Wizcon Application performance. You can also enable or disable specific functions. For more details, refer to page 23-22.

Configuring a Wizcon Server Station

A station is defined as a Wizcon Server automatically according to the plug, however the station name and station ID must be defined in the same way as for the SCADA station, as described below.

When configuring stations, no Wizcon station may have the same name as a Backup station with the '2' appended. For instance, if a Backup station is named Silo, no other Wizcon station on the network can be named Silo2.

Configuring SCADA and Network SCADA Stations

When configuring a SCADA station, you specify a unique name and a unique ID number for your station. It is recommended to keep a 10 number gap between different station IDs. For instance, if one ID is 80, the next ID should be 90, and so on. The range for ID numbers is 1 through 999.

Before you configure a SCADA station, you should know your station name so that you can give your SCADA station a unique name. Therefore, configuring your computer as a SCADA and Network SCADA station involves two steps:

- Knowing your computer station name.
- Defining a unique Wizcon SCADA station name in the *Local Station Configuration* dialog.

Note: SCADA and Network SCADA stations require a security plug.

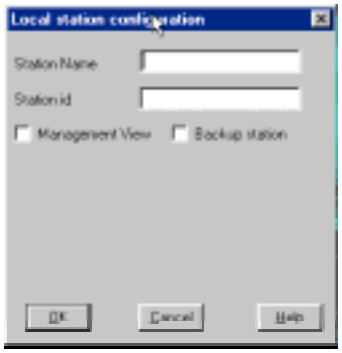
➤ **To define your computer as a SCADA/Network SCADA station:**

- Know your computer station name:

  1. Click the **Start** button on your desktop and point to **Settings**.
  2. From the popup menu, select **Control Panel**. The *Control Panel* window is displayed.
  3. Double-click on the **Network** icon. The *Network* dialog is displayed.
  4. Select the **Identification** tab. Your computer station name appears in the **Computer Name** field.
  5. Click **Cancel** to close the dialog, and **Cancel** again to close the Control Panel window.

- Define a unique Wizcon SCADA station name:

  1. From the *Network* menu, select **Local Station Configuration**. The *Local station configuration* dialog appears:



  2. In the **Station Name** field, specify a unique name for the station.
  3. In the **Station id** field, specify a unique ID number for the station.
  4. Leave the **Management View** and **Backup station** fields empty.

5. Click **OK** to save your definitions and to close the dialog.
6. Restart Wizcon to implement the changes.

Status of a Station and Wizcon Language

The status of a station can be queried through the $Backup Wizcon Language variable. The $BACKUP variable represents the status of the backup station. When this variables set to 1, the station is in passive mode. When the variable is set to 0, the station is in active mode.

Caution!:

Do not assign $BACKUP to a tag through Wizcon Language! Since Wizcon Language runs on both the master and backup station -the assignment statement of WIL5 $BACKUP is executed twice. Once by the master WIL5 and the other by the backup station's WIL5, thus not giving a true picture of the situation.

Querying the Status of a Station with Wizcon Language

The status of a station can be queried through the $BACKUP Wizcon language variable. The $BACKUP variable represents the status of the backup station:

- When this variable is set to 1 - the station is in Backup or passive mode.
- When the variable is set to 0, the station is in Master or active mode.

For more details refer to *Chapter 16, Wizcon Language*.

*Caution**:** Do not assign $BACKUP to a tag through the Wizcon language. Since Wizcon language runs on both the Master and Backup stations - the assignment statement of WIL5 $BACKUP is executed twice. Once by the Master WIL5, and the other by the Backup station's WIL5, thus not giving a true picture of the situation.*

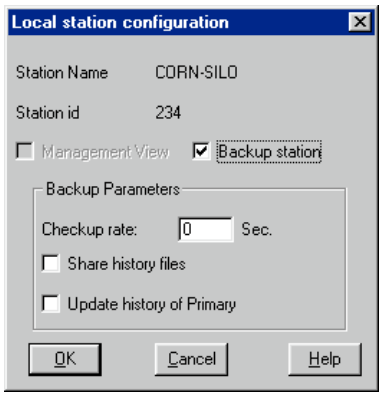
Configuring a Hot Backup Station

The Hot Backup configuration is based on a pair of SCADA stations: one operates as a master and the other serves as a standby or backup. If the Master station fails, the Backup station takes over.

A Backup station can also operate as a Network SCADA station, serving as an additional station for displaying and controlling the process on the Master station.

➤ **To define a station as a Hot Backup station:**

1. Exit Wizcon on the Master station and copy all the Master station application files to the Backup station
2. Run Wizcon.
3. From the *Network* menu of the Wizcon Application Studio, select **Local Station Configuration**. The *Local station configuration* dialog appears, as shown on page 23-11.
4. Select the **Backup station** checkbox. The **Backup Parameters** field appears:



The following options are available:

Checkup rate	Specifies the times per seconds (1/sec.) at which the Backup station will check if the Master station is still functioning.
Share history files	Specifies that the Backup and Master station both share the same history files (LRM, HIS). Both stations have the same tag history path and use a file server or peer-to-peer connection. This option is recommended when historical data is critical.
Update history of Primary	Updates the Master or main station with the data logged in the Backup station.

5. (Optional) If you are configuring the backup station as a Network SCADA station, leave the above options blank, and click **OK**.
6. Enter your specifications. Click **OK** to save them and close the dialog.

Note:

- Only tag historical data can be transferred to the Master and not alarm history. A Master station is automatically updated with the online data (tag values and live alarms) when it becomes active.
- Alarm history, recorded by the Backup station during the Master station fail-time, will not be transferred to the Master station after the master restarts!
- If neither of the proceeding options is selected, each station, when active, will record historical data independently, and no historical data will be transferred between the two stations.

Updating an exiting Hot Backup application

Both master and backup stations must be identical. The procedure below ensures that the tags file in the master and the backup station will always be identical. This is a *must* for master/backup applications.

➤ **The procedure to add/change tags to an existing Hot Backup Application:**

1. Exit from Wizcon in the backup station.

2. Add or change the new tags in the master station.

3. Copy the files to the *wizgates.dat* file to the backup station.

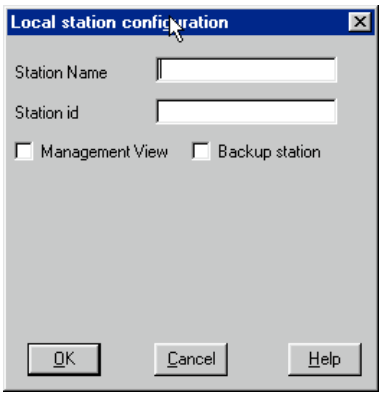
4. Run Wizcon in the backup station.

Configuring a Management View Station

Configuring a management view station is similar to defining a SCADA station, as described on page 23-10.

➤ **To configure your station as a Management View station:**

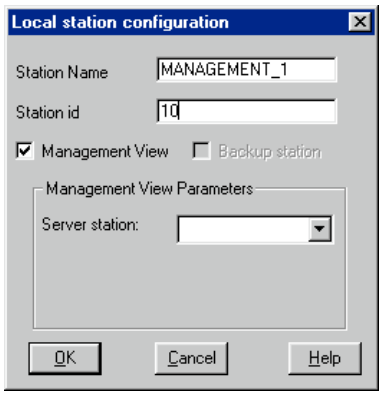
1. Load Wizcon without a plug.
2. From the *Network* menu of the Wizcon Application Studio, select **Local Station Configuration**. The *Local station configuration* dialog appears:



3. In the **Station Name** field, specify a unique name for the station.
4. In the **Station id** field, specify a unique ID number for the station.

   Keep a 10 number gap between different station IDs. For instance, if one ID is 80, the next ID should be 90. Range for ID numbers is 1-999.

5. Select the **Management View** checkbox. The **Management View Parameters** are displayed in the dialog.



6. In the **Server station** field, click on the arrow to the right and select a server station to indicate that requests for data from the local station will be directed to the Wizcon server.
7. Click **OK** to save your definitions and close the dialog.

Querying the Status of a Station with Wizcon Language

The status of a station can be queried through the $BACKUP Wizcon language variable. The $BACKUP variable represents the status of the backup station:

- When this variable is set to 1 - the station is in Backup or passive mode.
- When the variable is set to 0, the station is in Master or active mode.

For more details refer to *Chapter 16, Wizcon Language*.

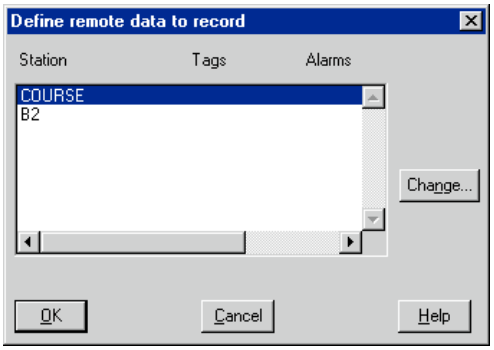
Caution: *Do not assign $BACKUP to a tag through the Wizcon language. Since Wizcon language runs on both the Master and Backup stations - the assignment statement of WIL5 $BACKUP is executed twice. Once by the Master WIL5, and the other by the Backup station's WIL5, thus not giving a true picture of the situation.*

In addition to Wizcon Server stations, both SCADA and Network SCADA stations are also able to record remote tags and alarms.

You can simulate the connection to a remote station that is not running, as described on page 23-20. This enables you to work with remote tags, alarms and images to help you when developing the local station application.

➤ **To specify remote tags and alarms for recording in your local database:**

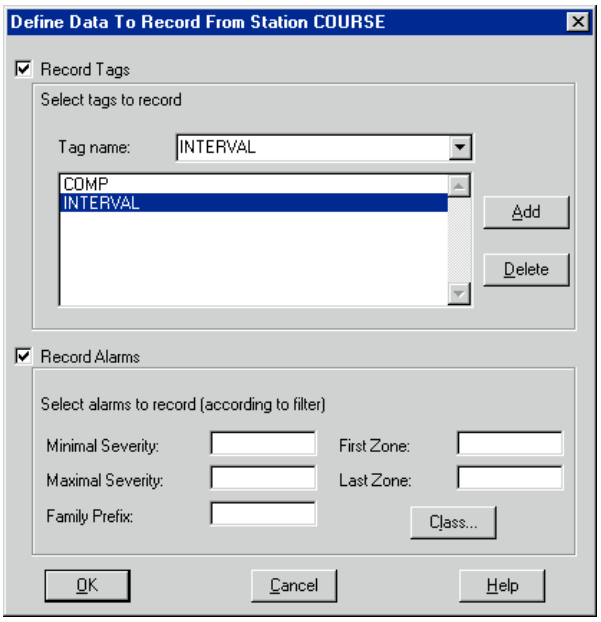
1. From the *Network* menu. select the **Record Remote Data** option. The *Define remote data to record* dialog appears:



2. Select the remote station for which you want the tag and alarm data to be recorded, and activate the **OK** button to save your settings and close the dialog.
3. Restart Wizcon for your changes to take affect.

➤ **To change the recording specifications of a remote station:**

Select a station in the list box and activate the **Change** button. The *Define Data To Record From Station* dialog appears:



The following options are available:

Record Tags

Specifies which tags you want to be recorded in your local database. Select to configure the tag recording parameters as follows:

Tag name: Specifies the tag that you want to record. Click on the arrow to the right of the field and select a tag or enter a name prefix so that all the tags beginning with the prefix are recorded.

After you specify a tag, activate the **Add** button to add the name to the list.

To delete a tag from the list, select the name you want to delete in the listbox and activate the **Delete** button.

Record Alarms

Specifies which alarms you want Wizcon to record in your local database. Select to configure the alarm recording parameters, as follows:

Specify values in the following filter fields, so that only the alarms that meet these specifications will be recorded in your local database. These values will appear under the Filter column in the *Define Data To Record From Station* dialog, shown on the previous page.

Minimal Severity

Maximal Severity

Family Prefix

First Zone

Last Zone

These filter fields together with the **Class** button are similar to the specifications defined for the Events Summary. Refer to the section called *Alarm Display*, in *Chapter 9, Events Summaries*.

Network Simulation Option

The Network Simulation option allows you to simulate the connection to a remote station that is not running. This enables you to work with remote tags, alarms and images to aid in developing the local station application.

➤ **To implement network simulation:**

1. Copy the application files of the remote station to a directory on a server drive, or your local hard disk.
2. Create a text file called NETSIM.DAT, as follows:

   STATION_NAME ID PATH

   where:

   "STATION_NAME" is the name of the remote station with which the connection will be simulated.

   "ID" is the station ID.

   "PATH" is the path specifying the location of the remote station's application files. This file must be located in the local application directory. For example:

   SCADA01 110 S:\WIZCON\REMOTE

The *Network Properties* menu enables you to set your network environment and establish maximum Wizcon Application performance, and to enable or disable specific functions.

➤ **To define network properties:**

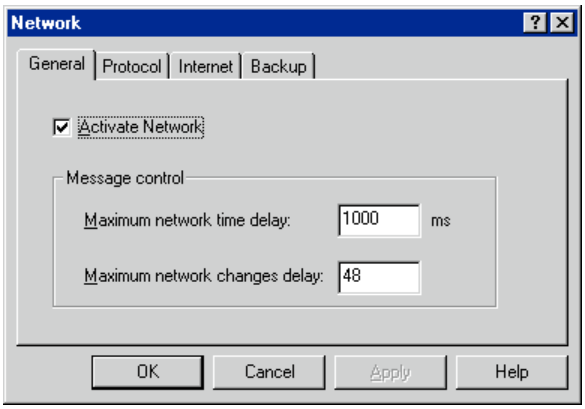
Double-click the **Wizcon Network** icon in the Control Panel.

Or,

From the *Network* menu of the Wizcon Application Studio, select **Network Properties**. The *Network* dialog is displayed, as shown on the following page, in which you can determine:

- Determine if the Wizcon Network module is loaded, enabling you to access Wizcon stations on the network, in the **General** tab, as described on page 23-23.
- Determine a network protocol to be used by Wizcon, in the **Protocol** tab, as described on page 23-24.
- Optimize network use, in the **Internet** tab, as described on page 23-25
- The Hot Backup switching mode, in the **Backup** tab, as described on page 23-26.

You can determine if the Wizcon Network module will be loaded in the **General** tab of the *Network* dialog. Refer to the previous page to see how to open this dialog.



The following options are available:

Activate Network Specifies that the network is activated. Select to activate.

Message control The following options are available:

Maximum network time delay: Determines the maximum time interval that a station will delay before updating the other stations with tag and alarm changes. The default time is 1000ms.

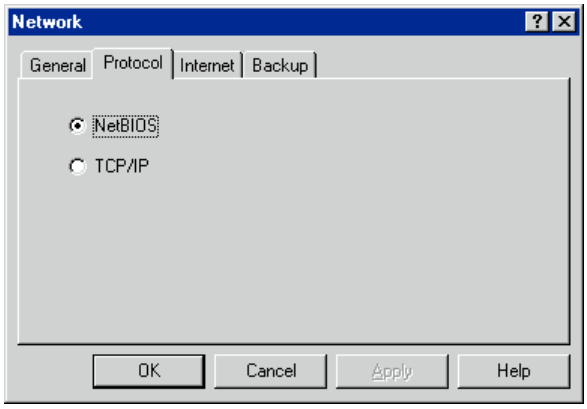
Maximum network changes delay: Determines the maximum number of messages that a source station accumulates before it sends the data buffer to a target station. The default is 48 messages.

Note: Restart Wizcon for changes to take effect.

Note: As soon as either of the two settings reaches the defined value, the data buffer will be sent.

Selecting a Network Protocol

You can select either the NetBIOS or TCP/IP network protocols in the **Protocol** tab of the *Network* dialog.



Click on the network protocol to be used by Wizcon. The default network is: **NetBIOS**.

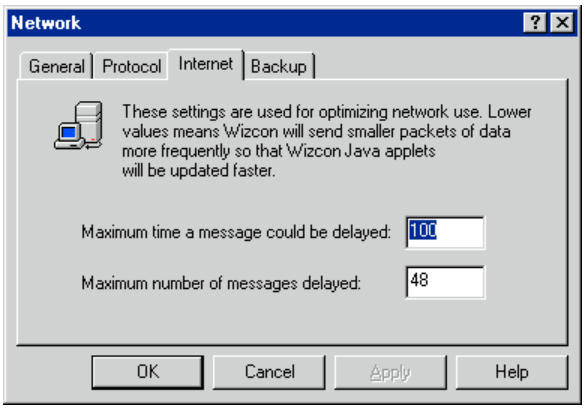
Note: Restart Wizcon for changes to take effect.

In order for a Wizcon station to communicate with Wizcon stations on other LANs, specify the Broadcast Address of the remote stations in a text file called OTHERNET.DAT. For more details about OTHERNET.DAT files refer to page 23-30.

Optimizing Network Use

You can optimize network use in the **Internet** tab of the *Network* dialog.

Determine lower values for the settings in this dialog so that Wizcon will send smaller packets of data more frequently, updating Wizcon Java applets faster.



The following options are available:

Maximum time a message could be delayed

Specifies the maximum time interval that a server will delay, before updating the Wizlets with tag and alarm changes. The default value is 100ms.

Maximum number of messages delayed

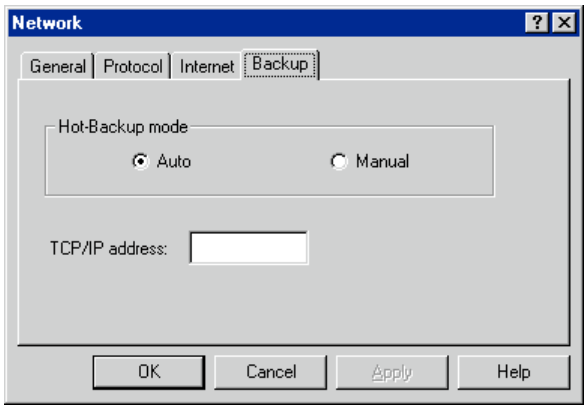
Specifies the maximum number of messages that a server accumulates before it sends the data buffer to the Wizlets. The default value is 48.

Note: The data buffer will be sent once either of the two settings reaches the defined value. Restart Wizcon for changes to take effect.

Configuring the Hot Backup Switching Mode

Note: Hot Backup is not applicable on the Web.

You can configure the Hot Backup switching mode in the **Backup** tab of the *Network* dialog.



The following options are available:

Hot Backup mode Determines the Hot Backup mode. The following options are available:

Auto: which is the default option.

Manual: Enables activating the Backup station regardless of the state of the Master station.

Both the Master and the Hot Backup stations must be set to the same mode.

TCP\IP address Specifies the TCP\IP address of the Backup station. To establish the link between a Master station and its Backup station, you must specify the TCP/IP address of the remote station in both stations.

If you are in Backup station, specify the TCP\IP address of the Master Station. And if you are in the

Master Station specify the TCP\IP address of the Backup station.

Make sure this field is empty when switching from Hot Backup configuration to SCADA station.

Note: The Backup station can only be manually activated by using the WizSetBackup ModeAPI in an add-on.

Note: Restart Wizcon for changes to take place.

For more details, refer to the Wizcon Programming Interface on-line Help.

Present connectivity needs cause organizations to combine desktop workstations, servers, and hosts into Local Area Networks (LANs), and enable even remote locations to access these networks. These LANs have to connect with other LANs and Wide Area Networks (WANs), and enable any pair of systems to communicate when they need to, regardless of their location in the network.

Transmission Control Protocol / Internet Protocol (TCP/IP) is a communications protocol that provides effective and reliable communications between computers in a network, and also between different networks.

Industrial uses of TCP/IP include transferring data between two networks in an organization. A large plant complex may have a network at one site whose stations communicate with stations on a network in a different part of the complex.

This section describes the following:

- TCP/IP Software, as follows, describes the software you need to install on your system.
- Wizcon configuration, page 23-29, describes how to configure your Wizcon network for TCP/IP.

TCP/IP Software

The TCP/IP software you need to install on your system is the Windows network protocol you are using.

This is located by clicking the **Start** button, pointing to **Settings** and selecting **Control Panel**. The *Control Pane*l window is displayed in which you can double-click on the **Network** icon to display the *Network* dialog.

For further information, refer to the Windows Readme file. In TCP/IP configurations, the IP addresses of the stations on the network are made up of 4 digits identifying the LAN and specific station on the network. During TCP/IP configuration, the IP Addresses and Broadcast Addresses should be defined according to the needs of your system. No special TCP/IP address configuration is necessary for Wizcon.

In order for Wizcon stations to be able to communicate on TCP/IP networks, the IP Addresses must be defined with the first 3 numbers identifying the LAN and the last number identifying the specific station.

Note: Wizcon will not support different configurations.

Wizcon Configuration

The Wizcon network is configured for your TCP/IP, as follows:

➤ **To configure the Wizcon Network for your TCP/IP:**

1. Install Windows NT or Windows 95 TCP/IP on all stations. To test the communication, use the Ping utility from the TCP/IP folder.
2. In the Tuning Parameters utility, set the **NET_PROTOCOL** parameter to **NPITCP**. To return to NetBios support, set the **NET_PROTOCOL** parameter to **NPINTBS,** or delete the line **`NET_PROTOCOL=NPITCP`** from the wiztune.dat file.
3. Specify the **Broadcast Address** of the remote stations in a text file called OTHERNET.DAT, as shown on the following page, so that a Wizcon station can communicate with Wizcon stations on other LANs,
4. Set the **NET_HOTBACKUP_ADDR** parameter to the IP address of Backup, so that a link is established between a Master station and its Backup station. For example:

   NET_HOTBACKUP_ADDR= 193.32.3.65

5. Access the **Tuning Parameters** utility of the Backup station and set the **NET_HOTBACKUP_ADDR** parameter to the IP address of the Master.

Note: The Tuning Parameters utility is described in more detail in Appendix C, Tuning Parameters.

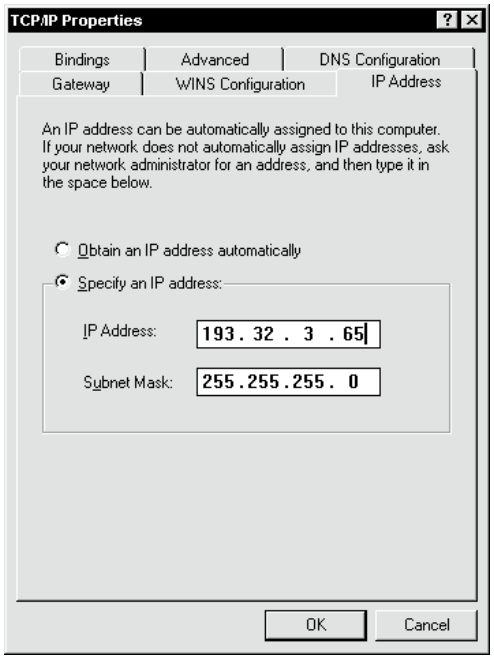
Sample OTHERNET.DAT file

Below is a sample OTHERNET.DAT file. This configuration file instructs Wizcon to communicate with stations on the network 193.32.3 and 193.32.7. The third line enables communication with *all* stations on LAN 194.49.5. The suffix 255 defines communications with all stations.

193.32.3.65

193.32.3.66

194.49.5.255


TCP/IP Properties
Bindings
Advanced
DNS Configuration
Gateway
WINS Configuration
IP Address
An IP address can be automatically assigned to this computer. If your network does not automatically assign IP addresses, ask your network administrator for an address, and then type it in the space below.
Obtain an IP address automatically
Specify an IP address:
IP Address:
193. 32 . 3 . 65
Subnet Mask:
255.255.255. 0
OK
Cancel

The Backup station and the Master station always have the same status of tags and alarms. This is executed in the following way:

Tags

- When a tag is changed at the active station, a message is sent to the passive station notifying of a tag change, with the ID of the tag and its new value. The passive station receives the message and performs Wiz5PutTagValue in memory only mode.
- When a tag is changed from the passive station, the request is routed to the active station where it is written to the PLC or to memory (depending on the type of the tag). The active station then informs the passive station that a tag was changed (as in case 1).
- When a passive station is first loaded, it requests an update of all tag values.

Alarms

- When an alarm is generated in the active station, the active station informs the passive station that an alarm was started. The forwarded information includes all that is needed to start the same alarm on the Backup station.

  The passive station, when it receives such notification from the active station, starts the alarm using an internal API similar to Wiz5StartAlarm.

  Further changes to the alarm generated in the active station are passed to the Backup station using the alarm ID and the event that occurred. (Ack/End/Class/Text changed).
- When a request to Start/Ack/End an alarm on the passive station is made, the passive station routes the request to the active station. The

passive station will show the result of the request after it receives the notification from the active station.

- When the passive station starts, it requests the status of all active alarms at the Master station, builds an *Alarm id on active station* to *Alarm id on passive station* translation table, and brings the passive station to the same status.

In automatic switch **backup** mode, the Master station periodically checks the connection with the Master station. The frequency of the check is user defined. For more details about fine-tuning, refer to *Appendix C, Tuning Parameters*.

In case of communication test failure with the Master station, or in case the Backup station was switched to active mode (in manual switch **backup** mode), the Backup station broadcasts a *backup is active* message to the network.

When the remote stations receive the message they:

- Update their internal stations database with the information that the Master station is now replaced by the Backup station.
- Disconnect session with the Master station.
- Reconnect to Backup station.
- In case the local station was a client of alarms and tags on the Master station, it re-registers as a client for the alarms and tags at the Backup station.

Chapter 24
WizSQL — Wizcon SQL Support

About this chapter:

This chapter describes WizSQL - Wizcon SQL support, as follows:

Overview, on page 24-3, describes an overview of SQL and the WizSQL Connection module.

Wizcon SQL Connection Module, page 24-4, describes WizSQL and how it can be configured.

ODBC SQL Support, page 24-5, describes installation, configuration and activation of ODBC.

Activating WizSQL, page 24-8, describes how WizSQL is activated.

The WizSQL File, page 24-11, describes how to define commands for reading and writing data from and to user-defined RDB tables.

Sample WizSQL Program, page 24-11, describes a sample SQL program.

WizSQL Commands - Overview, page 24-14, gives an overview of WizSQL commands and their functions.

Adding, Updating and Deleting Data, page 24-21, describes adding to, deleting from and inserting data into RDB tables.

Retrieving Data, page 24-24, describes retrieving data with the SELECT and FETCH commands.

String Expression, page 24-25, describes a string expression.

Wizcon Command, page 24-26, describes Wizcon supported operations.

Program Initialization, page 24-31, describes the initialize section of a ASCII file.

Program Termination, page 24-32, describes the termination section of an ASCII file.

Communication Failure Processing, on page 24-33, describes how WizSQL handles communication problems with the RDB.

WizSQL Messages, on page 24-36, lists and describes WizSQL messages.

Overview

Structured Query Language (SQL) is a standard language used for retrieving data from and sending data to a database management system. In database management systems (DBMS), information is stored in tables where each line of the table contains a record of information.

When an application needs to retrieve data from a database, you use the SQL language to make the request. The database program processes the SQL request, retrieves the requested data, and returns it to the requesting program. SQL also allows a program to update the database by adding new data, removing old data, and modifying previously stored data.

The WizSQL Connection module enables you to:

- Update user-defined database tables.
- Retrieve information from common databases and save it in Wizcon recipes. This type of data transfer allows users to send production orders from their business systems directly to the plant floor.

Note: This chapter assumes a basic understanding of the SQL language, Wizcon and the database management system that communicates with Wizcon.

The purpose of the Wizcon SQL Connection Module, called WizSQL, is to allow a two-way data exchange between Wizcon and database management systems.

WizSQL can be configured to do the following:

- Store Wizcon data in user-defined tables in a database management system. The data can be online values of tags, historical data or data derived by applying functions to Wizcon historical data.
- Retrieves data from database management system (DBMS) tables and updates Wizcon tags or other structures.

  The connection between Wizcon and DBMS systems allows easy implementation of laboratory analysis systems, batch tracing, recipe management, and order management applications. WizSQL is a separate module which is run from the Wizcon application setup.
- WizSQL can also be used as an event-driven language for doing calculations and extracting information from Wizcon history. When used in this way an SQL database is not required.

WizSQL Module supports the Microsoft Open Database Connectivity (ODBC) interface, allowing Wizcon to exchange data (uploading and downloading) with a variety of databases, including Sybase, INGRES, INFORMIX, DB/2 and others, as well as file formats such as dBase and Paradox.

Note: The Wizcon ODBC interface and the specific ODBC compliant driver to the relevant database must be obtained separately.

This section describes the following:

- Installing the Wizcon system files and the ODBC driver for your database, as described below.
- Configuring the Wiztune.dat file, as described on the following page.

Installation

To use the new ODBC support of Wizcon, install the following:

- The Wizcon System files from the standard Wizcon installation CD (Version 7.01 or higher), which include the WizSQL ODBC support.
- The ODBC driver for the database you are using. (Provided by the database vendor.)

ODBC Configuration

To configure your ODBC configuration, add the following variables to the wiztune.dat file:

WIZSQL_ODBC_ATTRIBUTES=database connection string

WIZSQL_INTERFACE=ODBC

Database Connection String

In the *database connection string*, you define the database you are using, plus other necessary attributes. It has the following format:

```
attribute=value;.....;attribute=value
```

The connection string must include the attribute: DSN=*data source name*.

➤ **To determine the Data Source Name:**

1. Click the **Start** button, point to **Settings** and click **Control Panel** from the popup menu. The *Control Panel* window is displayed.
2. Double-click the **ODBC** or **32 bit ODBC** icon. The *Data Sources* window is displayed with a list of data sources (drivers).
3. In the USER menu, select ADD, and then select the name of the driver you are using and click the **Finish** button.
4. The *ODBC Text Setup* dialog is displayed.
5. Fill in the necessary information, according to the driver you have chosen. Select the location where the sets of tables are created.

For further information refer to the relevant documentation of the driver you are using.

The following are examples of database connection strings:

- The line in Wiztune for Sybase System 10 ODBC driver (assuming the server name is Wizcon) will be:

```
WIZSQL_ODBC_ATTRIBUTES=DSN=Sybase System 10;
SRVR=Wizcon
```

- The line in Wiztune for dBASE format ODBC driver will be:

```
WIZSQL_ODBC_ATTRIBUTES=DSN=dBASEFile
```

Note: You should not include the UID (User ID or name) and PWD (Password) attributes in the connection string. They are given in the connect command in your WizSQL program.

Activating WizSQL and ODBC

If you are using an ODBC driver of a file format, (for example, dBASE, FoxPro etc.) use empty strings (**" "**) for the user and password in the connect command in the WizSQL program. For example:

```
CONNECT " "/" " ;
```

Before writing your WizSQL program, check which of the SQL commands are supported by the ODBC driver for the database you are using. You can also refer to the documentation of the specific driver you are using.

WizSQL is activated as follows:

`WIZSQL [/P/A/D/L/C] FileName`

where:

FileName - is the name of the WizSQL file. Enter the **FileName** without an extension. The system automatically attaches the suffix WSQ to the file.

/P - only Parse the Wizcon SQL program. Use this option to find syntax errors in the program. You do not need the database itself when you use it.

/A - Automatically run the backup file.

/D - print runtime debug messages for each command with its parameters.

/L -prints error, debug and warning messages to a log file. The log is the filename with LSQ suffix.

/**C** Error codes for detecting database disconnection.

In the WizSQL Backup mechanism, commands are written to a backup file once the communication with the server is lost (See the *WizSQL Communication Failure Processing* section for more details). WizSQL needs to know which database error codes indicate that it should start writing the commands to the backup file.

You can enter these error codes into WizSQL in its command line with the parameter /C in one of the following ways:

/Cxxxx - where xxxx is a database error code meaning that the communication with the database has ceased.

or,

/Call - all error codes received from the database mean that the communication with the database has stopped.

Example 1: WizSQL /C1234 /C4321 prog

The error codes 1234 and 4321 mean a communication error with the database server.

Example 2*:* WizSQL /Call prog

All error codes mean a communication error with the database server.

Note:

- The error codes can be found in the documentation of the database server you are using
- Several WizSQL files can run simultaneously. Make sure that WizPro is active before running WizSQL.

Activating WizSQL from the Command Prompt

You can activate WizSQL from the command prompt using the following flags:
`WIZSQL [/P],[/A],[/D],[/L],[/C],FileName`.

You can also run WizSQL from Wizcon Language. The command is as follows:
`SHELL "WIZSQL[/P],[/A],[/D],[/L],[/C],FileName."`

If you run WizSQL from a Wizcon Command Macro, use the same format.

Activating WizSQL from the Application Setup Menu Item

It is also possible to run WizSQL from the Application Setup menu item. From the application setup dialog click ADD and browse to locate WIZSQL.EXE, which should be added to the 'programs to run' field. In the 'parameters' field, enter the file name (without the suffix). You can also use the following flags: [/P], [/A], [/D], [/L], [/C].

Example: /L /D FileName

Note*: To run WizSQL properly, make sure to* ***only*** *checkmark (IT) the Open a Window field .*

WizSQL enables you to define commands for reading and writing data from/to user-defined RDB tables. These commands are defined in an ASCII file using a standard ASCII editor.

The format of the file is as follows:

Header section	Includes one line with the version number.
Initialization	Lists SQL and Wizcon commands for initializing variables and connecting to the RDB.
Commands	Includes a set of commands where each command is composed of a condition and a list of SQL and Wizcon commands.
Termination	Includes a list of SQL and Wizcon commands to be carried out before completing the program.
Remarks	Remarks can be inserted in the WizSQL file in one of two ways: // - from the slashes to the end of the line is a comment. /* */ - the comment can be closed at each end by these symbols.

Sample WizSQL Program

The WizSQL file below performs the following functions in a Wizcon application.

1. An order management system uses an RDB to process orders for production.
2. When preparing to produce the next order, WizSQL retrieves information on the pending order from the RDB.
3. The retrieved information is placed in a group of dummy tags, which are saved to a recipe.

4. The database is updated with a new status for the order just retrieved.
5. When production begins, the recipe of dummy tags is loaded into real tags.
6. When production is complete, the RDB is updated with the new status of the order produced.

```
WIZ SQL VERSION 7
INIT
   CONNECT @USER IDENTIFIED BY @PWDS;
   @NEW_ORDER = 0;
   @START_PRODUCTION = 0;
   @END_PRODUCTION = 0;
COMMANDS
   DESCRIPTION "Retrieving a new order from RDB";
   IF (@NEW_ORDER)
       BEGIN SELECT "SELECT Order_Id, Qty_1, Qty_2, Qty_3
FROM                Orders WHERE
       Orders_Status='new'  AND Order_Pri=@PRI";
       FETCH INTO @ORDER_ID, @PRODUCT1, @PRODUCT2,
       @PRODUCT3;
       END SELECT;
       @RCP_NUM = @RCP_NUM + 1;
       SAVE RECIPE "Dummy."+@RCP_NUM "Save specs of next
                   production order";
       @ORDER_STATUS = "pending";
   EXEC SQL "UPDATE Orders SET orders_status = '
   @ORDER_STATUS
'WHERE Order_Id = @ORDER_ID ";
   DESCRIPTION "Starting production of new order";
   IF (@START_PRODUCTION)
       LOAD RECIPE "Dummy."+@RCP_NUM;
       LOAD RECIPE "SQL.001";
```

```
      @ORDER_STATUS = "in production";
      EXEC SQL "UPDATE Orders SET Orders_Status = ’
      @ORDER_STATUS
’ WHERE Order_Id = @ORDER_ID ";
   DESCRIPTION "Ending production of order";
   IF (@END_PRODUCTION)
      @ORDER_STATUS = "production completed";
      EXEC SQL "UPDATE Orders SET Orders_Status = ’
      @ORDER_STATUS ’ WHERE Order_Id =@ORDER_ID";
   TERMINATE;
TERM
      COMMIT WORK RELEASE ;
      @NEW_ORDER = 0;
      @START_PRODUCTION = 0;
      @END_PRODUCTION = 0;
```

WizSQLCommands - Overview

The WizSQL module allows you to define commands for reading and writing data from/to user-defined RDB tables. Each command consists of three segments, as described in the table below:

Command Segment	Description
Command Description	Free text in quotation marks that explains the command purpose and comments. It is 80 characters long (maximum) and ends with a semicolon.
Condition	Logical condition for command execution. The SQL and Wizcon parts will be executed only if the condition changes from FALSE to TRUE.
Command List	Includes a number of mixed SQL and Wizcon commands which will be executed when the condition becomes true. Each is ended with a semicolon.

Types of commands :

SQL Command An SQL statement that can incorporate Wizcon tag names as tokens. This type of command connects/disconnects WizSQL to and from RDB and enables data exchange between Wizcon and the RDB. Three groups of commands are supported: **Connect**, as described on page 24-18, **Table Update** and **RDB Query**.

Wizcon Command A Wizcon related operation. Two types of Wizcon operations are supported: **Tag Assignment**, as described on page 24-26 and **Save/Load Recipe,** as described on page 24-29.

Block Command A block of SQL and Wizcon commands. If a command in a block fails, the execution stops, and all the SQL commands that have been executed to that point are automatically canceled using the ROLLBACK command. If the communication with the database is stopped, only commands that exist in a block are saved, and will be executed when the connection is renewed. For more details refer to page 24-30.

Backup Command Used to run the backup file, after the connection with the database is renewed. For more details refer to page 24-33.

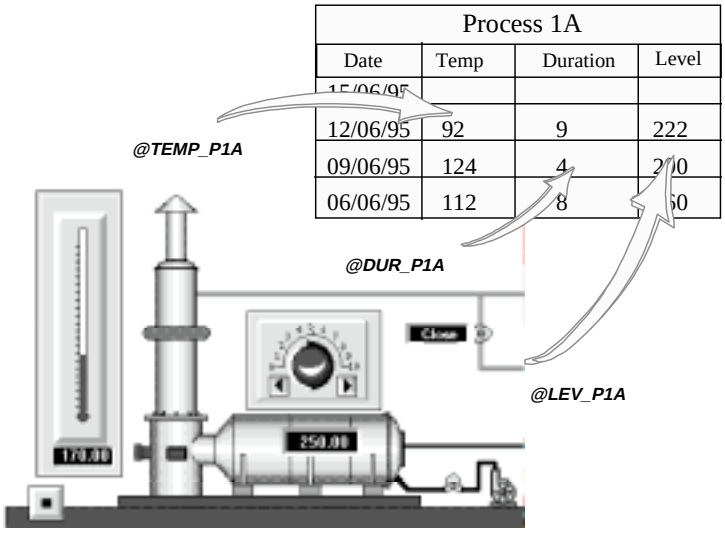
Termination The termination command signals WizSQL to stop running the commands in the WizSQL file.

IF The IF command is described in more detail on page 24-19.

The following example shows a typical WizSQL command containing a Description, Condition, and a combination of SQL and Wizcon commands.

```
DESCRIPTION “Save batch data into Process table.”;
IF (@BATCH_END)
   /* SQL INSTRUCTIONS */
   EXEC SQL “INSERT INTO process VALUES (@TEMP_P1A,
@DUR_P1A, @LEV_P1A)”;
   EXEC SQL “commit”;
   /* Wizcon command */
   @BATCH_END = 0;
```

Saving batch data into process table



WizSQL Condition

The Condition statement is a logical condition based on Wizcon tag values. The format of the condition expression is similar to the ‘C’ language format. Consequently, it is TRUE when it is different from 0.

You can use the mathematical and logical operators listed below in expressions. These symbols have the same meaning as the ones used in ‘C’ language.

Mathematical Operators:

+, -, *, /, %, |, &, ~, <, <=, >, >=, ==, !=

Logical Operators:

&&, ||, !, ^, AND, OR, NOT

The condition variable can be:

@TAG: The Wizcon tag name. It must be preceded by the **@** character.

For every tag that appears in the condition expression, WizPro updates WizSQL whenever one of those tags changes. When WizSQL receives the tag update message, it checks only the conditions that contain the tag whose value has changed. This event-driven mechanism saves computer resources and allows the Wizcon application to perform unaffected by communications with the DBMS.

The following are examples of condition expressions:

```
IF (@TEMP > @TEMP_SP && @DOIT == 1)
IF (@ANA01+@ANA02*@ANA03 < @ANA04/@ANA05 || @ANA06)
IF ($SQLRC == 1)
IF (@ANA01>5 AND NOT @ANA02 == 5*@ANA03)
```

Note: If at least one of the tags in the condition expression is in communication error or has been deleted, the condition will be ignored.

SQL Command

The SQL command is a standard SQL statement that is executed when the command condition becomes TRUE.

The SQL command may incorporate the Wizcon *@Tag* token that is translated to the tag value when it is inserted or updated in the database but the tag will receive a value only when the database is queried. WizSQL supports three groups of SQL commands explained in the following sections.

Only SQL data manipulation commands are supported. WizSQL does not support the standard SQL data definition commands for managing the DBMS. Refer to the relevant SQL documentation for the full syntax of each SQL command.

Connect/Disconnect

Every WizSQL program must connect to the database with the standard ***CONNECT*** command, and disconnect from the database using one of the standard *'COMMIT/ROLLBACK RELEASE'* commands. ***CONNECT*** can appear only in the initialization section, while ***DISCONNECT*** can appear only in the termination section.

Connect command:

Syntax:

```
CONNECT user-name IDENTIFIED BY password [connect
string];
CONNECT user-name/password [connect string];
```

The *user-name*, *password* and *connect string* parameters are string expressions. String expressions are described below.

Connect String (optional)

Enables connection to different databases from two different Wizcon programs running in parallel.

If no connection string is given, then the connection string is taken from the Wiztune global parameter WIZTUNE_ODBC_ATTRIBUTES = database connection string.

Examples:

```
CONNECT “PC Soft” IDENTIFIED BY “Wizcon” ; or
CONNECT @USER/@PASSWORD;
```

Caution: WizSQL cannot communicate with the RDB without the CONNECT command in the INIT section of the WizSQL file.

Disconnect command

Syntax:

```
COMMIT WORK RELEASE;
ROLLBACK WORK RELEASE;
```

If Command

The If command can be used anywhere in the program, as with all other standard commands, in one of the following ways:

```
IF (expression)
       A Command
IF (Expression)
BEGIN
       Command 1;
       Command 2;
       …
       Command n;
END
```

To any of the two IF formats an ELSE part can be added with a single command, or with a list of commands between BEGIN and END.

Examples:

```
DESCRIPTION “Example 1”
IF (@ANA01 > 200)
       LOAD RECIPE “Recipe.001”;
IF (@ANA03 > 100)
       @ANA02 = 30;

DESCRIPTION “EXAMPLE 2”
IF (@ANA10 ==1)
       @INDEX = 0;
       WHILE ( @INDEX < 5 )
                @INDEX = @INDEX+1;
IF ( @ANA05 == 100 )
BEGIN
       SAVE RECIPE “Name.1” “Description”;
       @ANA06 = 300;
END
ELSE
   @ANA06 = 200;
   END
```

Note: This command is available in Wizcon.01 and higher.

These commands belong to the Data Manipulation Language part of SQL and enable data to be added to, deleted from, and inserted into RDB tables. Commands such as **INSERT**, **UPDATE**, **DELETE**, **COMMIT**, and **ROLLBACK** can be used in WizSQL. The syntax for executing one of these SQL statements is:

Syntax:

```
EXEC SQL string-expression;
```

```
Where the result of the string expression is the SQL
command to be executed. Note that the SQL command should
conform to the standard SQL syntax;
```

The following examples cover the most common SQL commands.

INSERT: Adds a new row of data to a table.

Syntax:

```
INSERT INTO table-name (column-name, column-
name,...) VALUES (value, value,...)
```

Example:

```
EXEC SQL “INSERT INTO Process1 (Batch,
Temperature, Pressure) VALUES (‘August’,
@TEMP, @PRES)”;
```

```
UPDATE:   modifies the values of one or more
columns in selected rows of a single table.
```

Syntax:

UPDATE table-name SET column-name = expression WHERE search-condition

Example:

```
EXEC SQL “UPDATE Process1 SET Temperature =
@TEMP WHERE Batch = ‘August’”;
```

DELETE: Removes selected rows of data from a single table.

Syntax:

```
DELETE FROM table-name WHERE search-condition
```

Example:

```
EXEC SQL “DELETE FROM Process1 WHERE Batch =
@BATCH_NUM”;
```

Note: The syntax in the above commands is partial. For the full syntax, please refer to your SQL documentation.

COMMIT: Signals the successful end of a transaction. A transaction is a sequence of one or more SQL statements that together form a logical unit of work. The SQL statements that form the transaction are closely related and perform interdependent action. Each statement in the transaction performs some part of the task, but all of them are required to complete the task.

The COMMIT statement tells the DBMS that the transaction is now complete. All of the statements that comprise the transaction, for example, inserts, updates, delete have been executed and the database is consistent. If you do not use the commit command, other clients cannot see the changes made, and when exiting, data is lost.

Syntax:

```
EXEC SQL “COMMIT”;
```

ROLLBACK: Signals the unsuccessful end of a transaction. It tells the DBMS that the user does not want to complete the transaction. Instead the DBMS should delete any changes made to the database during the transaction. It restores the database to its state before the transaction began.

Syntax:

```
EXEC SQL "ROLLBACK";
```

Data is retrieved by one **SELECT** command that finds a group of records, and one or more **FETCH** commands that insert values from one record in the RDB into tags. Often, the values are saved in dummy tag recipes for later use.

The syntax of the SELECT command is:

```
BEGIN SELECT “select command according to standard SQL
syntax”;
       select command block
END SELECT;
```

Note: The SELECT command string can be a string expression.

The *Select Command Block* is a mixture of SQL and Wizcon commands and FETCH commands. The syntax of the FETCH command is:

```
FETCH INTO @TAG1, @TAG2, @TAG3....;
```

Note:

- The syntax of the FETCH command in WizSQL differs slightly from the standard SQL syntax.
- The number of tags in the FETCH command must be the same as the number of fields selected in the SELECT command.
- The tags in the FETCH command and the values assigned to them must be of the same type.

A typical Select Command Block may look as follows:

```
IF (@BATCH_BEGIN)
          BEGIN SELECT “SELECT Temp, Pressure FROM
          Process1 WHERE Batch = ‘July’”;
          FETCH INTO @SAVE_TEMP, @SAVE_PRESSURE;
          SAVE RECIPE “BatchBegin.007” “Batch begin
status of month 7”;
   END SELECT
```

The string expression can be:

- A String tag.
- A Quoted string.
- One or more of the above concatenated with the '+' sign.

Example:

The following example shows how a string expression that combines string tags and quoted strings is translated by WizSQL.

Assume that the Wizcon string tags have the following values:

```
@INSERT_COLUMNS     = "( Batch, Temperature, Pressure )"
@INSERT_TAGS = "( 'August', @TEMP, @PRES )"
```

And that WizSQL contains the following command:

```
EXEC SQL "INSERT INTO Process1" + @INSERT_COLUMNS +
"VALUES" + @INSERT_TAGS;
```

WizSQL translates and executes this command as follows:

```
EXEC SQL "INSERT INTO Process1 (Batch, Temperature,
Pressure) VALUES ('August'@TEMP, @PRES)";
```

Note: String tags used within an SQL command require single quotes. For example, assuming @Month is a string tag @Month = "August";

*EXEC SQL "INSERT INTO Process1 (Batch, Temperature, Pressure) VALUES (**'@MONTH'**, @TEMP, @PRES)";*

Two types of Wizcon operations are supported:

- Tag Assignment, described below.
- Save/Load Recipe, as described on page 24-29.

Tag Assignment

In Wizcon tag assignment operations, the value assigned to the tag can be any expression in 'C' format (as in the condition expression), or the result of a historical function on a tag. For example:

Syntax:

```
@tag-name = expression
@tag-name = historical expression
```

Expression

You may assign one of the following expression types to a tag:

- If @tag_name is a numerical tag, it is a numerical expression as described earlier in the condition section.
- If @tag_name is a string tag, it is a string expression as described earlier in the SQL command section.
- **$SQLRC:** This is a variable containing the SQL completion code. It is a predefined variable that indicates the status of the last SQL command executed.

Much like the Wizcon Report module, WizSQL supports historical operations on tag values in historical files. The results of these operations can be assigned to tags. The WizSQL historical functions are split into two groups.

The functions in the first group perform a calculation on values within a specified time interval:

WMIN	Returns the lowest value recorded during the specified interval.
WMAX	Returns the highest value recorded during the specified interval.
WAVERAGE	Returns the arithmetic average of all the values recorded during the interval.
WWAVERAGE	Returns the average of recorded values of the tag, relative to the time the value occurred in the tag.
WINTEGRAL	Returns the sum of recorded values, multiplied by the time the value occurred in the tag, until the next recording of the same tag.
WSUM	Returns the sum of all the values recorded during the interval.

The syntax for this group of commands is as follows:

Syntax:

```
FUNCTION(@tag-name, from-time, to-time)
```

Example:

```
WMIN(@ANA01, REL(1, 10:0:0), REL(1, 0:0:0) );
```

The functions in the second group perform calculations based on a value range given:

WINTIME Returns the total amount of time that tag values were in the specified range.

WINCOUNT Returns the number of times that tag values were recorded for a specified value range.

The syntax for this group of commands is as follows:

Syntax:

```
FUNCTION(@tag-name, from-time, to-time, low-value, high-value)
```

Example:

```
@DURATION = WINTIME(@TEMP, REL(0, 10:0:0), REL(0, 0:0:0), 90, 100);
```

Note: For more information on each WizSQL historical command, please refer to the Reports chapter of the Wizcon User's Guide.

From/To Parameter

For every WizSQL historical function, you must specify the From/To parameter to define the time interval for which historical values will be analyzed. A time indicator can be absolute or relative.

Syntax:

```
indicator(date, time)
```

- The **Indicator** part is used for indicating whether the date-time is absolute or relative. Specify one of the following:

  ABS - Absolute date & time: A full date and time with minutes and seconds must be specified.

  REL - Relative date & time: The number of days back and number of hours back are specified.

RELD - Relative date & Absolute time: The number of days back and a specific time are specified.

- The full format for the **date** and **time** parameters is as follows:

  date day-month-year

  time hour:minutes:seconds

Examples:

```
ABS(12-10-89, 12:30:00)
```

This specifies 12:30 on October 12, 1989

```
RELD(10, 12:30:00)
```

This specifies 12:30 10 days ago.

```
REL(10, 1:0:0)
```

This specifies 10 days and 1 hour ago.

Save/Load Recipe

The Save and Load Recipe commands in WizSQL perform the same operations that they normally do in Wizcon.

Save and Load Recipe commands are defined as follows:

Syntax:

```
SAVE RECIPE “recipe-name” “description”
LOAD RECIPE “recipe-name”
```

Note: The recipe-name and description parameters support string expressions.

Example:

```
SAVE RECIPE “Batch.002” “Yoghurt production”;
LOAD RECIPE “Batch.002”;
```

Block Command

A block of SQL and Wizcon commands are used to ensure that a database will be updated with end of batch data even if that database is offline or down. If a command in a block fails, the execution stops and all the SQL commands that have been executed to that point are automatically canceled using the ROLLBACK command. If the communication with the database is stopped, only commands that exist in the block are saved and will be executed when the connection is renewed. For more details, refer to page 24-33.

Syntax:

```
BEGIN BLOCK
```

Commands list, which is a list of Wizcon and SQL commands except for SELECT.

```
END BLOCK ;
```

Program Header

A header must appear in the WIZSQL file.

The syntax of the header of a program file is:

WIZ SQL VERSION version-number

The syntax of the header of a backup file is:

WIZ SQL BACKUP VERSION version-number

Refer to page 24-33, for more details on SQL backup.

The initialization section of the ASCII file includes SQL and Wizcon commands for opening relational databases and initializing the WizSQL related tags. This section must include at least a CONNECT command, as described earlier.

The syntax of this section is:

INIT

```
    Commands list - a list of assignment, recipe, connect,
and SQL commands.
```

The following shows an example of an initialization section in a WizSQL file:

```
INIT
   @ANA03 =  0;
   CONNECT @USER IDENTIFIED BY @PWD;
```

The termination section of the ASCII file includes an SQL command for disconnecting from the database, and can include Wizcon commands to reset SQL-related tags. This section should include one of the two SQL disconnecting commands described earlier, otherwise, ROLLBACK is used. WizSQL is signaled to go to the Termination section of the WizSQL file by using the TERMINATE command or when WizPro shuts down.

The syntax of this section is:

TERM

```
   Commands list - a list of assignment, recipe, dis-
connect, and SQL commands.
```

The following is an example of the TERMINATE command and a termination section.

```
IF (@BATCH_END)
     TERMINATE;
TERM
   COMMIT WORK RELEASE;
   @ANA03 = 9999;
```

When a communication problem with the RDB occurs, WizSQL activates a backup mechanism to back up commands that should be executed.

The commands are backed up into a backup file, consisting of the program file name and the extension BSQ.

Only commands that are in a block are backed up. If the failure occurs in the middle of a block, all the commands of the block are backed up. Commands that exist outside of a block are written to the backup file as a remark.

Assignment commands are executed regardless of the communication status with the database.

After the communication with the database is renewed, you can run the backup file in two ways:

- **Automatic**: To activate this option, WizSQL should be activated with the option /A. If this option is on, WizSQL automatically tries to renew the connection with the database once a minute. When it succeeds, it automatically runs the commands from the backup file.
- **Manual**: If the option /A is unavailable, you need to activate the backup manually. A special command exists for this purpose:

Syntax:

```
EXEC BACKUP ;
```

When this command is activated, WizSQL tries to re-connect to the database and run the commands from the backup file.

Note: You can edit the backup file before running it. This way, you can fully control the commands that will be run.

Example:

The following is an example in which backup file is executed according to the tag SQLBACKUP:

```
IF ( @SQLBACKUP )
       EXEC BACKUP ;
       @SQLBACKUP = 0 ;
```

There are two types of messages that may occur when using WizSQL:

- Wizcon messages.
- ODBC Driver messages.

Note: For further information about the ODBC Driver messages, please refer to the documentation of the ODBC Driver you are using.

Wizcon Messages

There are three types of WizSQL messages:

- Error messages.
- Warning messages.
- Debug messages.

Note that:

- Debug messages are printed to the screen when the /D parameter is active. These messages show the user the upcoming step.
- All messages are printed to a log file when the /L option is on. The name of the log file is the same as the WizSQL file with the suffix LSQ

The WizSQL Command message is printed as line# column# and the attached message of the Wiz command file. When a message is written to a log file, then the date and time are also added.

Note: If the message occurs on the same date as the opening date of file, only the time is indicated.

The following is a list of the WizSQL messages and the actions required to correct them. The Error message is displayed in Bold.

1. **“Number of fields (#), differs from the number of tags (#)”**

   Action: Ensure that the number of tags in a Fetch command is the same as the number of Fields in the corresponding Select command.

2. **"Type of field differs from type of tag"**

   Action: Ensure that the type of a tag in a Fetch command is the same as the type of the corresponding field in the table.

3. **"The tag *tag-name* does not exist"**

   Action: Verify that the tag-name is valid.

4. **"Unexpected end of file"**

   Action: Your Wiz SQL program doesn’t end correctly. Correct it and run Wiz SQL again.

5. **"Tag name is too long"**

   Action: Tag name format can be *station-name:tag-name,* where *station-name* is optional and up to 15 characters in length, and *tag-name* is up to 31 characters.

6. **"String is too long"**

   Action: Ensure that the maximum amount of characters in the string is 255.

7. **"WizPro is not active"**

   Action: WizSQL does not operate if WizPro is not active. Activate Wizcon and then WizSQL

8. **"Failed to open input file *file-name*"**

   Action: Make sure the file 'file-name' exists and is enabled for opening.

9. **"Memory allocation failed"**

   Action: Check if the drive where your swapper file resides has enough space. If not, ensure enough room for it.

10. **"Illegal operator for the expression parameters"**

    Action: The operator used in an expression is illegal for the parameters. For example, using an arithmetical operator for string parameters.

11. **"Illegal parameters for the expression operator"**

    Action: The parameters used in an expression are illegal for the operator. For example, using arithmetical parameter for string operators.

12. **"Illegal expression type in assignment"**

    Action: The expression type should be the same as the tag type to which the expression is assigned.

13. **"A WizPro function failed, see the file errors.dat"**

    Action: An internal function call failed. See the errors.dat file for the cause of the failure.

14. **"No SQL connect command, in the INIT section"**

    Action: A Wiz SQL program communicating with a database must have a CONNECT command in its INIT section.

15. **No backup mechanism is enabled"**

    Action: A Wiz SQL program communicating with a database, must have either automatic backup mechanism activated by including the /A option, or the manual mode by having the command: *EXEC BACKUP* in the Wiz SQL program.

16. **"No TERMINATE command in the program"**

    Action: The WizSQL will only terminate when WizPro is shutdown. If you want to enable the operator to stop WizSQL, add a TERMINATE command to your program, under a termination condition.

17. **"Illegal tag type"**

    Action: The type of tag is illegal for this command. For example, a string tag can’t be used in a historical function. Insert a legal tag type.

18. **"No records found for this tag"**

    Action: No historical records were found while reading a history of a tag for calculating a historical function. Check the tag’s recording mode.

19. **"Illegal time parameter"**

    Action: The format of the time parameter of a historical function is wrong. Correct the time parameter.

20. **Syntax error "command string"**

    Action: A syntax error was found during parsing the file. The ‘command string' contains the erroneous part. Look at the given line and column to locate error.

21. **’command’ failed, error code is ’error code’**.

    Action: A run time command execution failed. The command part describes the command which fails, the 'error code' gives the reason for the failure. The error code can be found in wizerr.h.

Chapter 25
Multiple Tags

About this chapter:

This chapter describes how Multiple Tags are used in the Wizcon system, as follows:

Overview, on the following page, describes an overview of Wizcon Multiple Tags.

Invoking Multiple Tags, on page 25-3, describes how to invoke multiple tags.

Overview

The Wizcon Multiple Tags utility can be used to optimize performance and enhance functionality. This utility enables you to adjust system parameters and establish a proper Wizcon application working environment.

The Multiple Tags utility displays tag lists and enables you to read and write tag values, as well as change several tag attributes. In addition, Multiple Tags provides options to save the tag list as a recipe or a tag list file.

Tag list files are ASCII files that contain lists of tags and their attributes. These files have the extension .GLS and can be used in Wizcon to generate tag lists in the tag definition procedure.

Invoking Multiple Tags

Menu ⇨Tools / Multiple Tags

The Multiple Tags utility are invoked from the Wizcon Application Studio.

Invoking multiple tags from the Wizcon Application Studio involves two steps:

- Specifying a tag list file you want to load, and defining a tag filter so that only specific tags are loaded from the file.
- Displaying the tag list in the *Tags Exerciser Program* window, as described on page 25-5.

Specifying a Tag List File and Defining a Tag Filter

In the *Tag Filter* dialog you can:

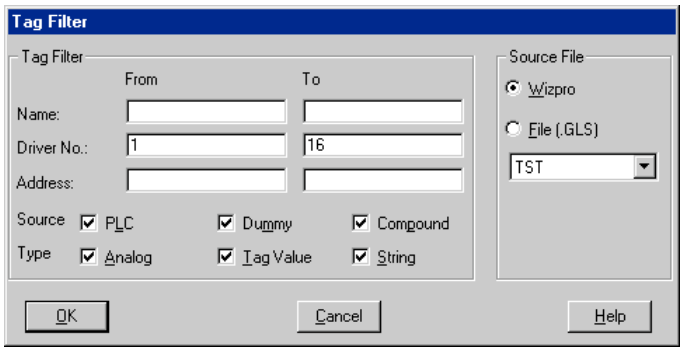
- Define a tag filter: Only those tags that meet the filter requirements you specify appear in the generated list.
- Specify a tag list file: You can choose between a standard Wizcon tag file and a .GLS file.

To specify a tag list file and/or define a tag filter:

1. In the Control Panel of the Wizcon Application Studio, double-click the **Multiple Tags** icon.

   or,

   From the *WizTools* menu, select **Multiple Tags**. The *Tag Filter* dialog, shown below, is displayed on top of the *Tags Exerciser Program* window.



The following options are available:

Tag Filter — Specifies filter parameters so that only the tags that meet the filter requirements will appear in the generated tag list. The following tag options are available. They are explained in more detail in the section on *Tag Definition* in *Chapter 7, Tags*.

Name

Driver No.

Address

Source (**PLC**, **Dummy**, **Compound**)

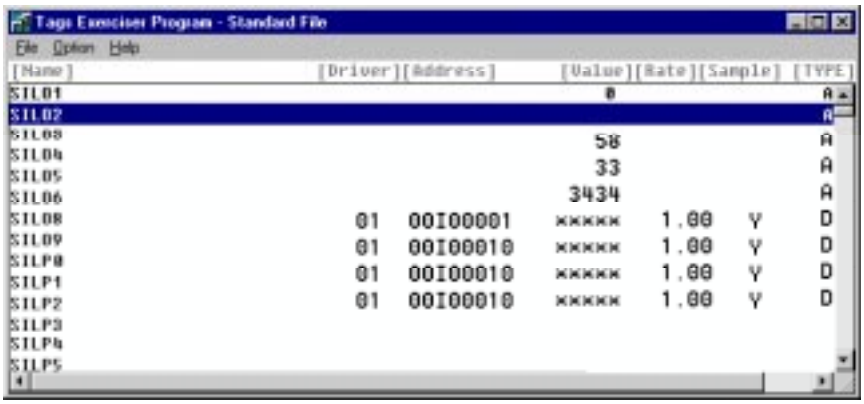
Type (**Analog**, **Tag Value**, **String**).

Source File	Specifies a tag list file. The following options are available: **WizPro**: A standard Wizcon tag file. **File (.GLS)**: A GLS file. Enter the file in the field (without specifying the extension). You can click in the field to display a list of existing .GLS files from which you can select a file.

2. Click **OK** to save your options. The *Tag Filter* dialog closes and the *Tags Exerciser Program* window is displayed with a list of the tags that meet the filter requirements you specified.

The Tags Exerciser Program Window

The *Tags Exerciser Program* window displays a list of the tags that meet the filter requirements specified in the *Tag Filter* dialog, as described on the following page. The following is an example of a tag list in the *Tags Exerciser Program* window:



The data in the window is displayed under the following columns.

Column	Specifies
Name	The tag name.
Driver	The Driver number associated with the tag.

Column	Specifies
Address	The address of the tag in the PLC.
Value	The last read value of the tag.
Rate	The tag sampling rate, in seconds (specified when defining the tag, as described in *Chapter 7, Tags*).
Sample	The tag sampling attribute, which can be: **Y**: for always **R**: only if clients are registered for that tag. **N**: for never.
TYPE	The tag type, which can be: **A**: for Analog **D**: for Digital **A** or **D**: for Compound (depending on the type of tags in the formula) **S:** for String tags **No character**: for dummy tags.

The dialog contains a menu bar with the following menus and options:

Menu	Select	To do
File	**New**	Clear the tag list from the Tags Exerciser Program window.
	Open	Open the *Tag Filter* dialog to define a tag filter and specify a tag list file, as described on page 25-3.
	Save as Recipe	Save the list as a recipe, as described on page 25-10.
	Save as GLS	Save the list as a tag list file, as described on page 25-11.

Menu	Select	To do
Options	**Sample Selected**	Sample the currently selected tag in the list.
	Sample All	Change the **Never** sample attribute of all the tags in the list to **Request**. Tags are then sampled only when clients are registered for them.
	Sample Disable	Select this item to change the sample attribute of all the tags to **Never**. This will disable the sampling of all the tags.
	Find Tag	Search for a tag, as described on page 25-8.
	Zoom Tag	Modify the tag options, as described on page 25-8.
Help	**Using Help**	Display the standard Windows Help on how to use Help files.
	Find	Display the Find Setup Wizard in which you can enter key words to find a topic.
	Help Index	Display the Multiple Tags Help topics.

Note: If a communication error occurs, a line of asterisks appears for any tag represented in the tag list that is associated with the VPI to which the error occurred. The line of asterisks is on-going and appears until the error is corrected. When the error is corrected, the tag value appears in the tag list.

Find Tag

Menu ⇨ Options / Find Tag

After a list is generated, you can search for a specific tag.

➤ **To find a specific tag:**

From the *Options* menu in the *Tags Exerciser Program* window select **Find Tag**. The *Find Tag By Name* dialog is displayed:

Specify the name of the tag you want to search for and activate the **Find** button. The tag will appear highlighted in the list of tags.

Note that the name you specified is used as a prefix in the name-matching process. Also that the search is modeless, meaning that you will not have to close the dialog to perform any other operation in the window.

Zoom Tag

You can use the **Zoom Tag** option to modify the attributes of a tag in the Tags list. The attributes that you can modify and operations that you can perform include:

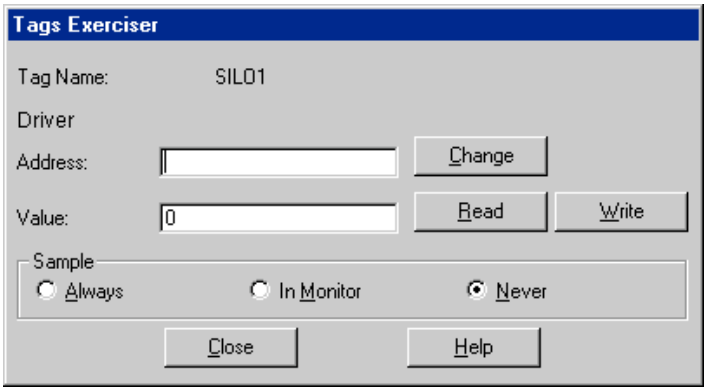
- Reading the tag value.
- Writing a value to the tag.
- Changing the sample attribute.

➤ **To modify the attributes of a tag:**

Double-click the tag in the list.

or,

Click a tag in the list to select it, and select **Zoom Tag** from the *Options* menu. The *Tags Exerciser Program* window is displayed as follows:



The following options are available:

Tag Name	The name of the tag.
Driver	The Driver address to which the tag belongs.
Address	Specifies the current tag address. Enter the new address and activate the **Change** button to confirm the change.
Value	Displays the specified tag value. Activate the **Read** button to display the current value. Enter the new value and activate the **Write** button.
Sample	The following options are available: **Always**: The tag will be sampled always. **In Monitor**: The tag will be sampled only when its value is requested by a Wizcon module (displayed in an image window).

This mode minimizes communications traffic and improves system performance.

Never: Tag sampling is disabled.

Note: This dialog is modeless, meaning that you can switch to a different tag without closing the dialog, by simply double-clicking on the desired tag in the list.

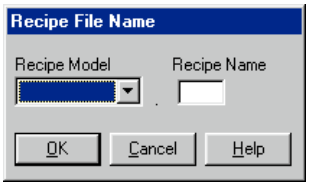
Saving the Tag List

The tag list can be saved in one of two file types:

- A recipe file, as described below.
- A tag list (.GLS) file, as described on the following page.

➤ **To save the current tag list in a recipe file:**

1. From the *File* menu, select **Save as Recipe**. The *Recipe File Name* dialog is displayed:

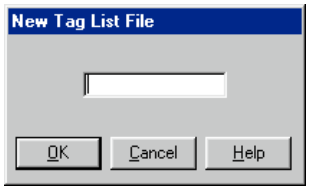


2. Enter a recipe model to which you want the recipe to belong in the **Recipe Model** field. Click inside the field to display a list of existing recipe models.
3. Specify the name of the recipe file in the **Recipe Name** field.
4. Click **OK** to save your definitions and close the dialog.

Note: For more details about recipe models and recipes, refer to Chapter 17, Recipes.

➤ **To save the current tag list in a tag list file:**

1. From the *File* menu, select the **Save as GLS** option. The *New Tag List File* dialog is displayed:



2. Enter the name of the file in which the list is to be saved without the GLS extension.
3. Click **OK** to save your definition and to close the dialog.

Appendix A
Wizcon for Windows and Internet Files

About this appendix:

This appendix describes the data and configuration files used by Wizcon for Windows and Internet, as follows:

File Name	Function
wizgates.dat	Contains tag definitions.
wizgates.dbf, wizgates.cdx	Contains tag names and ID cross references.
alerts.dat	Contains alarm definitions.
errors.dat	Contains information, warnings and error messages.
wiztune.dat	Stores Wizcon variables used for settings.
users.dat	Contains users definitions.
wizcfg.dat	Contains configuration information of paths and printers settings.
netcfg.dat	Contains information on station network settings.
wizvpi.dat	Contains information about communication driver definitions and Wizpro options (g+/i,a+/-...).

File Name	Function
wizpro.txt	Contains Wizpro comm. error string.
alarms.prt	Contains alarm printer configuration.
lrm.dat	Contains information on current active alarms. Wizpro restarts alarms in this file when it reloads.
GTddmmyy.dbf GTddmmyy.cdx GTddmmyy.fpt	Contain information on daily tag values, history file in FoxPro format (VFI5CB). (dd=day, mm=month, yy=year)
Gtddmmyy.dat Gtddmmyy.idt Gtddmmyy.str	Contain information on daily tag values, history file in an internal Wizcon format (VFI5FST). (dd=day, mm=month, yy=year).
Alddmmyy.dbf ALddmmyy.cdx	Contain information on daily alarms history file in FoxPro format. (dd=Day, mm=month, yy=year)
wizmacro.dat	Contains information on the default macro file.
wizmacro.err	Contains macros error messages.
groups.dat	Contains user group names.
wizmenu.dat	Contains menu authorizations settings.
classes.dat	Contains alarm user class names.
wrestart.dat	Stores the last state of Wizcon. Used to restart Wizcon in the same state after a power failure.
Set_up.dat	Contains the complied Wizcon language.

File Name	Function
ecl.dat	Contains the Wizcon language configuration.
Command5.dat	Contains the Wizcon Language source.
wizddec.dat	Contains DDE Client block definitions.
*.IMG	Image picture file.
*.VIM	Contains image window definitions.
*.ILS	Image list file. Image picture in ASCII format.
*.LAY	Layout file.
*.ANN	Events Summary window definition.
*.CHR	Chart window definition.
*.ANL	History Viewer window definition.
RPD*.DAT	Contains the reports fields descriptions.
RPT*.DAT	Contains the layout of the fields in the report.
*@RC	Recipe model.
"model name".???	Recipe file.
*.GLS	Contains tag lists in ASCII format.
*.ALS	Contains alarm list in ASCII format.
*.WNT	Trend Profile for the Trend wizlet.
*.WNA	Event Summary Profile for the Alarm Viewer wizlet.
*.WNP	Picture file for the Picture Viewer wizlet

Appendix B
Converting Wizcon 5 Applications

About this appendix:

This appendix provides instructions on how to convert Wizcon 5 applications to Wizcon 7 for Windows, as follows:

Working with Wizcon 5 and Wizcon 7, the following page, describes how to run Wizcon 5 applications with Wizcon 7.

Copying an Application to other Locations or PCs, page B-3, describes moving application files to another location.

Wizcon 5 Compatibility, page B-4, provides instructions on how to adjust Wizcon 5 applications to run with Wizcon 7.

Differences between Wizcon 7 for Windows and Wizcon 5.1 for OS/2, page B-6, describes operating system differences when running Wizcon.

Special Characters Consideration, page B-10, describes how to overcome the differences in character set between Wizcon 7 and OS/2.

Running Your Application the First Time, page B-11, describes how to run a converted application for the first time.

Wizcon 7 is very similar to Wizcon 5 for OS/2. However, some differences do exist due to different system behavior and capabilities between the operating systems. Since file formats are compatible, copying Wizcon files from a Wizcon 7 for OS/2 application to Wizcon 7 for Windows is basically all that is required in order to run the application under Wizcon7. The opposite is not always true.

If you have Wizcon 5 and Wizcon 7 already installed on your PC, you may want to run your Wizcon 5 applications with Wizcon 7's Studio. Wizcon 7 enables you to open your old applications with Wizcon 7.

Wizcon 5 Application uses **.Wza* and Wizcon 7 Application uses **.wz7* files.

If you wish to run your Wizcon 5 application in Wizcon 7, you can open the old application with Wizcon 7.

If you right-click, the pop-up menu opens. Select the **Open with Wizcon 7** option. Your Wizcon 5 application then opens in the Studio.

To save your Wizcon 5 application in Wizcon 7 format, select **Save** from the Wizcon Application Studio *File* menu.

In any folder of your application, right click and a pop-up menu appears. Select *New*. You will receive two options: **Wizcon 5** and **Wizcon 7**. Select the one you wish your application to operate in.

Copying an Application to other Locations or PCs

If at any stage, you plan to move your application to another location, it is advisable that you keep the windows in a sub-directory of your application directory.

The Wizcon Application Studio will keep the windows in a relative path as long as they appear in the directory, for example, \IMG\HOTEL.VIM. Therefore, when you copy the application, just make sure you copy all sub directories as well. Regarding other files such as tags, and alarms, they are expected to be found in the path as set in the default Path settings.

Caution!

If you are using the Wizcon Application Studio *File ⇨ Save as* option to save an application, be aware that this Save as file does not include *all* the application files, but only the window list. (not even the windows). If you are planning to copy an application to another directory, make sure to copy *all* the application files to the new directory.

Wizcon 5 is fully compatible with Wizcon 7. However, due to some interface changes, using Wizcon 7 on existing Wizcon 5 applications requires some adjustments.

The Wizcon 5 application file WZA is supported by the Wizcon Application Studio. Running <Wizcon WizApp.WZA> loads the application Add-ons. In addition the default path is scanned for a list of windows and lists are filled.

Note:

- Wizcon7 is not downward compatible with Wizcon5.
- You cannot run both Wizcon 7 and Wizcon 5 simultaneously.

Authorization issues

If you run Wizcon.exe in a directory with a Wizcon 5 application, you will see the Quick Access bar as well as the Wizcon Application Studio. You should use Menu authorization to set the groups you want to enable access to the Wizcon Application Studio.

For example, you can select an unused group, let's say group 32, and name it **Studio**.

From the Wizcon Application Studio ⇨ Design ⇨ Menu Items the *Menu Authorization* dialog opens. Select **Quick Access Bar**. Press **Groups** and select only group 32. To name this group, select from Studio ⇨ Design ⇨ Group Names. In the *Group Names* dialog enter **Studio** in the **Group 32** field.

Refer to the Chemical, Water, and Hotel applications in Samples for an example of this useful technique, and to the *Operator Access Authorization* section of *Chapter 5, Getting to Know the Application Studio*.

Driver Definitions

When you add a new driver, Wizcon 7 automatically detects if the driver is of serial type and enables the serial parameters definitions. The old NULL and Special types are obsolete. The file format of WIZVPI.DAT remains the same.

Differences Between Wizcon 7 for Windows and Wizcon 5.1 for OS/2

APIs

- Wizcon 7 On Windows supports the 32-bit Wiz5 APIs set only.
- 32-bit add-ons that use the Wiz5 APIs set need to be recompiled for Windows NT and Windows 95.
- REXX is available in Wizcon 5 for OS/2 only.

Communication Drivers

- Wizcon 7 On Windows supports only the 32-bit VDB communication driver interface.
- 32-bit VDB OS/2 drivers need to be recompiled for Windows.

Image

- Windows does not support OS/2 Meta files.
- OS/2 Icon format, used to symbolize clusters, is supported by Wizcon 5 for OS/2 only.
- Pipes can have colors that are not solid (patterns) under Wizcon 5 for OS/2 only.
- Ellipses can be drawn sideways (slanted) only under Wizcon 5 for OS/2.
- Sliders have more functions in Wizcon 5 for OS/2 than in Wizcon 7 On Windows.
- The default font in Wizcon 7 On Windows is a Bitmap font. In Wizcon 5 for OS/2, it is a vector font.
- Windows does not support the shear characteristic of Vector fonts.

- Wizcon 7 On Windows allows only basic patterns to be drawn in transparent color.
- OS/2 and Windows font names and typefaces are different. (For further information on Overcoming Image Font Differences, see below).
- In most cases, same images under Wizcon 5 for OS/2 and Wizcon 7 On Windows will not be shown the same size. (For detailed explanation see below).

Overcoming Image Font Differences

Loading an OS/2 image in Windows produces the message *Missing fonts*. A new conversion file ‘FNTCNVT.DAT‘ eases the conversion process.

The file has one line per font (system font not Wizcon) as follows:

```
NAME1="Courier" TYPE1=V SIZE1=0x0 NAME2="Courier New"
TYPE2=V SIZE2=0x0


NAME1="Tms Rmn" TYPE1=B SIZE1=5x15 NAME2="MS Serif" TYPE2=B
SIZE2=6x14
```

If a font is not found while loading an image, then the ‘FNTCNVT.DAT‘ file (if present in your system) is read and used to create a conversion table.

NAME1:	Font name in OS/2
NAME2:	Parallel font name in Windows NT and Windows 95.
TYPE:	V for vector font B for Bitmap font
SIZE:	Must be 0x0 for vector font Font size for bitmap

For bitmap fonts a line must be provided even if the font exists in both systems. For example:

```
NAME1="Courier" TYPE1=B SIZE1=9x15 NAME2="Courier"
                TYPE2=B SIZE2=9x15
```

Notes: A line starting with ' ;' is a comment. All lines must start at the first column. No empty lines are allowed.

After loading an image, select **Font Definition** in the *Options* menu. Enter a definition for each font, click **OK**, then click **Change** and save the font's definition. The image will be updated with the new fonts.

Due to different sizes of fonts, this procedure might not be sufficient for all font conversions. For some Vector fonts you will need to change the width and height in order for the fonts to display properly. Also, some text might need to be adjusted manually in the image, so that the size of the text will be displayed accurately.

PC Soft has provided a FNTCNVT.DAT file (created during installation), that has the basic fonts for both systems. This file is located in the Proj directory. (*.DAT files)

Use this file as a base for your font conversion.

Overcoming Image Size and Resolution Differences

Due to different hardware and operating systems loading the same image in OS/2 and Windows (in most cases) the image will not display the same size. While the window itself, in pixels, remains the same size, one centimeter in one image will not be one centimeter in the other. One possible solution is to individually stretch or shrink images. Wizcon 7 On Windows provides a global tuning parameter that can be used to automatically apply the adjustment. The parameter format is:

IMG_RESFACTOR = xx.xx

In which xx.xx is a floating point number that scales the image. Value on 1 will leave the image as is, values less than 1 will shrink the image, and values greater than 1 will expand the image.

➤ **To obtain the correct value for your application:**

1. Load the image in OS/2 and measure some image's object's length (a line will do).
2. Load the same image in Windows and measure the same object's length.
3. Divide the first length with the second length and the result is the xx.xx value.

Enter the IMG_RESFACTOR with the value you found to WIZTUNE and reload Wizcon 7.

Default value is 1.

Special Characters Consideration

Windows uses a different character set than OS/2. Languages with special characters such as **é, â, ä, ü,** etc. will not be displayed correctly.

To overcome this problem, export all the Wizcon definitions into ASCII files. Then, using any conversion utility, such as Word or WordPad, load the files in DOS Text format and save them in Text format. Make sure the extension is not changed to TXT. Load Wizcon and import all ASCII files.

If your application runs on Wizcon 7 On Windows and on Wizcon 5 for OS/2 connected through the network, avoid special characters in tabs definition, Station names and alarms text. Also, avoid applying special characters to string tabs.

Running Your Application the First time

When you run your converted application for the first time, create a shortcut. Right-click on your desktop, select *New* ⇨ *Shortcut*. In the *Create shortcut* dialog, browse and select *Wizcon 7 folder* ⇨ *Bin* ⇨ *Wizcon.exe.* Press **Next** and you may select a title for your shortcut. When you press **Finish**, the Icon is on your desktop.

Right-click the icon and select **Properties**. Select the **Shortcut** tab. In the **Start In** field, enter the Application's directory. This enables the icons to be able to run Wizcon the next time by double-clicking on the icon.

Appendix C
Tuning Parameters

About this appendix:

This appendix describes how to use the Wizcon tuning parameters to optimize performance and enhance functionality, as follows:

Overview, on the following page, describes the Wizcon Tuning Parameters.

Tuning Parameters, page C-3, provides a list of the tuning parameters available in the wiztune.dat file.

Wiztune.dat, page C-24, provides a printout of a typical wiztune.dat file.

Overview

The Wizcon Tuning parameters can be used to optimize performance and enhance functionality.

Each Wizcon building block has its own tuning parameters which can be accessed by right-clicking its container in the All Containers section in the Wizcon Application Studio and selecting **Properties** from the displayed popup menu. For example, right-clicking **Alarms** and selecting **Properties** from the popup menu, displays the *Alarms Properties* dialog.

Each field in the dialog represents an Alarm tuning parameter.

Each time you make a change to a tuning parameter in the *Properties* dialog of a specific building block, it is reflected in the wiztune.dat file located in the c:\wizcon\proj directory. Parameters that were not displayed in the file before being modified, are displayed after modification.

You can access the wiztune.dat file and change an entry back to the Wizcon default. You can also tune a parameter directly into the file.

Following is a list of all the Wizcon tuning parameters, their locations, default values and the field they represent in the containers *Properties* dialog. It also states whether you can apply a change online or if you have to restart Wizcon for the change to take effect.

The following tuning parameters are available in Wizcon.

ALARM_PRT_2_LINES

Type YES if you want the alarm to be printed in two lines. The first line will contain the WizPro title, timestamp, etc. The second line will contain the alarm text. Restart Wizcon for changes to take effect.

This parameter is represented by the **Print alarm over two lines** field in the **Printer** tab of the *Alarm Parameters* dialog. For more details, refer to the *Alarm Properties* section in *Chapter 8, Alarms*.

Default value

NO.

ALARM_PRT_CONDENSE

Contains the escape sequence sent to printer before each alarm. In this line, you can type a value that will represent an ASCII escape code used to instruct your printer to condense the alarm text (smaller characters). Each control code is a decimal number, and more than one code must be separated by a comma.

For example, if you want to send ESC 7 (the digit 7, ASCII 55), use ALARM_PRT_CONDENSE=27,55 (ESC=27 and 7=55 in ASCII code).

If you do not want to print in the condensed mode, do not type any value after the keyword (ALARM_PRT_CONDENSE=). Restart Wizcon for changes to take effect.

This parameter is represented by the **Alarm printer escape sequence** field in the **Printer** tab of the *Alarm Parameters* dialog. For more details, refer to the *Alarm Properties* section in *Chapter 8, Alarms.*

Default value

ASCII 15 (CTRL+O).

ALARM_TIME_FORMAT

This parameter is used to select between four different alarm time formats for both the and the Alarm printer. The following options are available:

- Day + Time - Day in month and time.
- Date + Time - Full date and time.
- Date + Time + ms - Full date + Time + milliseconds.
- Day + Time + ms - Day in month + Time + milliseconds.

Restart Wizcon for changes to take effect.

This parameter is represented in the **Time Format** tab of the *Alarm Parameters* dialog. For more details, refer to the *Alarm Properties* section in *Chapter 8, Alarms.*

Default value

DAY + TIME.

ALGEN_REGARD_STATE

In this line, you can type YES to cause the alarm generator *not* to generate new alarms if a condition remains true and the alarm is defined as auto-ended (or force ended). For example, if an alarm condition is A001 > 100, and the alarm is defined as Auto-End, when the tag value changes to 120, an alarm will be generated. If the value then changes to 110, a new alarm will *not* be generated if YES was specified for this option. If NO is selected, the alarm will be generated. Restart Wizcon for change to take effect.

This parameter is represented by the **Avoid generating new alarms** field in the **General** tab of the *Alarm Parameters* dialog. For more details, refer to the *Alarm Properties* section in *Chapter 8, Alarms*.

Default Value

NO.

ANN_AUTO_SCROLL_TO_TOP

If set to YES, this parameter determines that when a new alarm arrives, the Events Summary automatically scrolls to show the top alarms in the list. This ensures that if the new alarm is important, the operator will not miss it because he scrolled the list too far. Restart Wizcon for changes to take effect.

This parameter is represented by the **Scroll alarm list** field in the **General** tab of the *Events Summary Parameters* dialog. For more details, refer to the *Events Summary Parameters* section in *Chapter 9, Events Summaries.*

Default Value

NO.

ANN_DOUBLE_CLICK

This parameter, if set to ASSIST, enables you to obtain alarm help text whenever you double-click on an alarm in an Event Summary. If ACK is selected, causes the alarm to be acknowledged whenever you double-click on the alarm in the Event Summary. The change is implemented online.

This parameter is represented by the **Alarm help text status** field in the **General** tab of the of the *Events Summary Parameters* dialog. For more details, refer to the *Events Summary Parameters* section in *Chapter 9, Events Summaries.*

Default Value

The default value is ASSIST.

ASKSAVELAYOUT

This parameter determines if Wizcon will prompt you to save the layout when you exit Wizcon. Select YES or NO. The change is implemented online.

This parameter is represented by the **Prompt to save layout** field in the **General** tab of the *Layouts Properties* dialog. For more details, refer to the *Layouts* section in *Chapter 5, Getting to Know the Application Studio.*

Default Value

The default is YES.

AUTORESTART

This parameter if set to YES, determines if you want Wizcon to automatically recover the last state after a crash (power failure, etc.). The change is implemented online.

This parameter is represented by the **Auto Restart after an illegal shutdown** field in the **General** tab of the *Station Properties* dialog. For more details, refer to the Station Properties section in *Chapter 5, Getting to Know the Application Studio*

Default Value

NO.

CHR_MULTIMARKERS

This parameter affects the style of the markers in the **Line with marker** and **Marker only** graphs. When this parameter is set to YES, a different marker will be drawn for different colors, so graphs with two different colors will be drawn with two different markers. Restart Wizcon for changes to take effect.

Note: Only 10 markers are available. Colors 1 to 6 will have the same markers as colors 11 to 16.

This parameter is represented by the **Use chart multi markers** field in the **General** tab of the of the *Charts Properties* dialog. For more details, refer to the *Charts Parameters* section in *Chapter 18, Charts.*

Default Value

NO.

DEFAULTUSER

Enables you to select the name of the user you want automatically logged in whenever you start Wizcon (default user). Use an asterisk (*) for the last user. If a password is missing, the user will be prompted to enter it. The format is User.Password. Changes are implemented online.

This parameter is represented by the **User** and **Password** fields together in the *Station Properties* dialog. For more details, refer to the *Station Properties* section in *Chapter 5, Getting to Know the Application Studio.*

Default Value

NO USER.

IMG_BLINKRATES

Determines the blinking rate values for dynamic object. The format of this parameter is:

IMG_BLINKRATES=fast medium slow.

It is recommended to increase the values for this option, if it is anticipated that a large number of dynamic objects on the screen will be updated at once.

The blink rate is the amount of time the object will appear on the screen, then disappear, then reappear, and so on.

The values you specify for fast, medium and slow are in milliseconds, and can be from 50 (1/20 second) to 30,000 (30 seconds). If you specify a value that exceeds these limits, Wizcon will automatically apply the maximum and minimum values instead. Restart Wizcon for changes to take effect.

Note:

- *High blink rates decrease the system's performance.*
- *When using the wiztune.dat file to enter the values, use commas (,) to separate the values.*

This parameter is represented by **The blinking rate values for dynamic objects (msec)** field in the **Dynamic** tab of the *Image Properties* dialog, as described in the *Image Properties* section of *Chapter 12, Image Editor*.

Default Value

500 1,000 2,000ms.

IMG_EDIT_REFRESH

Enables an image to be repainted automatically, after actions such as moving, copying and so on, that may leave the image drawn incorrectly. It is useful for small and medium sized zones, (an image with a few objects). Changes are implemented online.

This parameter is represented by the **Repaint images after editing operations** field in the **View** tab of the *Image Properties* dialog, as described in the *Image Properties* section of *Chapter 12, Image Editor.*

Default Value

YES.

IMG_FAST_ZONE_THRESHOLD

This parameter determines the period of time (in ms) for *slow* zones. A zone is *slow* if it has a background that takes more than a given period of time to draw.

This parameter improves the drawing time for *Goto Zone* operations by using a cache of memory bitmaps for drawing the background of slow zones. For example, IMG_FAST_ZONE_THRESHOLD=2,200 means that a zone is considered to be slow if its background takes 2200ms or more to draw. Restart Wizcon for changes to take effect.

Note:

- *This parameter only affects the background of the image. Dynamic elements are drawn as before.*
- *This parameter operates only when NOT in **Edit** mode.*

The range is 0 to 1 hour (in ms).

This parameter is represented in the **Fast zone threshold (msec)** field in the **Fast Zone** tab of the *Image Properties* dialog, as described in the *Image Properties* section of *Chapter 12, Image Editor*.

Default Value

2,500ms.

IMG_MAX_FAST_ZONES

This parameter determines the limit of the number of fast zones bitmaps that can be kept in a single window memory cache. When a window reaches this limit, the least recently used fast zone bitmap is removed from the cache in order to make room for the new bitmap. The range is 0-50. Restart Wizcon for changes to take effect.

This parameter is represented by the **Maximum fast zones** field in the **Fast Zone** tab of the *Image Properties* dialog, as described it the *Image Properties* section of *Chapter 12, Image Editor.*

Default Value

0 (FastZone disabled).

IMG_PARSEONLOAD

Enables or disables tag names parsing upon loading in Images. Disable this option to shorten image load time for images that contain network tags. Restart Wizcon for changes to take affect.

Caution: When this option is disabled, the validity of network tags is not checked. It is suggested to use this option after all tag definitions on network stations are completed.

This parameter is represented in the **Parse each image when loading** field in the **Loading** tab of the *Image Properties* dialog, as described in the *Image Properties* section in *Chapter 12, Image Editor.*

Default Value

YES.

IMG_POOLSIZE

Sets the amount of memory available for image objects. The value for the parameter can be set from 60 to 150.

The default enables large images with many objects to be created but allows only about 10 image windows to be open at one time. The lower the value, the more image windows that can be opened simultaneously, as long as they are smaller in size. Restart Wizcon for changes to take effect.

This parameter is represented in the **Images memory pool size** field in the **Loading** tab of the *Image Properties* dialog. For more details, refer to the *Image Properties* section in *Chapter 12, Image Editor*.

Default Value

150.

IMG_RESFACTOR

This parameter sets a global stretching or shrinking factor that applies to all images. It is needed in order to overcome display differences caused by replacing an operating system, a monitor or other hardware devices. The display of images is resolution-dependent. This parameter is also used for moving between resolutions.

Note: It is not recommended to develop an application using a factor other than 1.

While the image window itself, in pixels, remains the same size, one centimeter in one image will not be one centimeter in the other. Value of 1 will leave image as is. Values greater than 1 expand the image.

To obtain the correct value for your application:

- Load the image in OS/2 and measure the length of an object in the image (a line will do).
- Load the same image in Windows and measure the length of the same object.
- Divide the first length with the second length and the result is the *xx.xx* value.
- Enter the IMG_RESFACTOR with the value you found, and reload Wizcon.

The range is 0.1<=MG_RESFACTOR<=10. Restart Wizcon for changes to take effect.

This parameter is represented in the **Resolution factor** field in the **View** tab of the *Image Properties* dialog. For more details, refer to the *Image Properties* section in *Chapter 12, Image Editor*.

Default Value

1.

IMGMAXWAIT / IMGMINWAIT

Together, these parameters determine the image update performance in milliseconds. Restart Wizcon for changes to take effect.

Default Values

IMGMINWAIT=10, IMGMAXWAIT=2,000.

These parameters are represented by the **Image update rate** field in the **Rates** tab of the *Image Properties* dialog, as described in the *Image Properties* section in *Chapter 12, Image Editor*.

IMGWIZMSGBUF

Determines the size of the internal message buffer that images use to collapse tag/alarm notification messages received by Wizpro.

When tag values change, an image receives messages in a buffer from WizPro and updates graphical objects accordingly. The range is 5 to 500 messages.

A *high* value for this parameter improves the performance of images with rapidly changing dynamic objects, so that images will not have to make graphical updates for each tag value message. Restart Wizcon for changes to take effect.

This parameter is represented by the **Size of the internal message buffer that images use to collapse tag/alarm notification messages** field in the **Rates** tab of the *Image Properties* dialog, as described in the *Image Properties* section in *Chapter 12, Image Editor.*

Default Value

20 messages.

INTASKLIST

This parameter determines whether or not Wizcon appears in the task list. Select NO if you do not want Wizcon to appear in the task list. This prevents unauthorized users opening or closing Wizcon. Select YES to place Wizcon in the task list. Restart Wizcon for changes to take effect.

This parameter is represented by the **Put Wizcon in task list** field of the **General** tab in the *Station Properties* dialog, as described in the *Station Properties* section in *Chapter 5, Getting to Know the Application Studio*.

Default Value

YES.

LGRBUFSIZE

This parameter determines the WizPro logger buffer size for history files, in lines (records). Maximum is 2,048 records.

Increase the value for this option if it is anticipated that a large number of changes will occur at once, at any time during the Wizcon session. Restart Wizcon to implement changes.

This parameter is represented in the **Buffer size** field in the **Wizpro Logger** tab of the *Tag Properties* dialog. For more details, refer to the *Defining Tag Properties* section in *Chapter 7, Tags.*

Default Value

256 records.

LGRFLSHTIME

This parameter determines a value that will represent the WizPro logger flush to disk rate, in seconds (for history files). Maximum is 3,600 seconds. Restart Wizcon for changes to take effect.

The parameter is represented in the **Flush rate** field in the **Wizpro Logger** tab of the *Tag Properties* dialog, as described in the *Defining Tag Properties* section of *Chapter 7, Tags.*

Default Value

30 seconds.

LOGIN_TEXT

Determines the text you want to appear for login alarm texts. If you omit the login text, the corresponding alarm will not be generated. For example: $U logged-in. Changes are implemented online.

This parameter is represented by the **Login Alarm text** field in the **General** tab of the *Alarms Properties* dialog. For more details, refer to the *Alarm Properties* section in *Chapter 8, Alarms.*

LOGOUT_TEXT

This parameter determines the text you want to appear for logout alarms. $U represents the current user name. For example: $U logged-out. If you omit the logout texts, the corresponding alarms will not be generated. Changes are implemented online.

This parameter is represented by the **Logout Alarm Text** field in the **General** tab of the *Alarms Properties* dialog. For more details, refer to the *Alarm Properties* section in *Chapter 8, Alarms.*

NET_HOTBACKUP_ADDR

In order to establish the link between a Master station and its Backup station, you must specify the TCP/IP address of the remote station. It should be specified in both stations when working with TCP/IP. This parameter specifies the TCP/IP address of the Backup station. If you are in the Backup station, specify the TCP/IP address of the Master Station. and if you are in the Master station, specify the TCP/IP address of the Backup station.

When working with TCP/IP, make sure that the Net_Hotbackup_Addr parameter is empty when switching from Hotbackup configuration to SCADA station. Restart Wizcon for changes to take place.

The parameter is represented in the **TCP/IP address** field in the **Backup** tab of the *Network* dialog. For more details refer to the *Network Properties* section of *Chapter 23, Wizcon Network.*

NET_HOTBACKUP_MODE

This parameter determines the Hotbackup switching mode. The Hotbackup station can be activated automatically or manually. Both Master and Hotbackup stations must be set to the same mode. Select **Manual** mode to enable activating the Backup station regardless of the state of the Master station. Restart Wizcon for changes to take effect.

Note: The Backup station can only be manually activated by using the SetBackup mode API in an add-on.

Refer to the Wizcon Programming Interface online help for more details.

This parameter is represented in the **Hot Backup mode** field in the **Backup** tab of the *Network* dialog. For more details refer to the *Network Properties* section of *Chapter 23, Wizcon Network.*

Default Value

AUTO.

NET_MAXCHANGESDELAY

This parameter determines the maximum number of messages that a source station accumulates before it sends the data buffer to a target station. Restart Wizcon for changes to take effect.

This parameter is represented by the **Maximum network changes delay** field in the **General** tab of the *Network Properties* dialog. For more details refer to the *Network Properties* section of *Chapter 23, Wizcon Network.*

Note: For the following two network settings, the data buffer will be sent once either of the two settings reaches the defined value.

Default Value

48 messages.

NET_MAXTIMEDELAY

This parameter determines the maximum time interval that a station will delay before updating the other stations with tag and alarm changes (See note on the previous page). Restart Wizcon for changes to take effect.

This parameter is represented by the **Maximum network time delay** field in the **General** tab of the *Network Properties* dialog. For more details refer to the *Network Properties* section of *Chapter 23, Wizcon Network.*

Default Value

1,000ms.

NET_PROTOCOL

This parameter selects the network protocol to be used by Wizcon. The two network protocols are NetBios or TCP/IP. Restart Wizcon for changes to take effect.

This parameter is represented by the **NetBios** and **TCP/IP** fields in the **Protocol** tab of the Network dialog. For more details refer to the *Network Properties* section of *Chapter 23, Wizcon Network.*

Default Value

NetBios.

NETWORK

Determines if the Wizcon Network module will be loaded, allowing you to access Wizcon stations on the network. Restart Wizcon for changes to take effect.

This parameter is represented by the **Activate network** field in the **General** tab of the *Network* dialog. For more details refer to the *Network Properties* section of *Chapter 23, Wizcon Network.*

Default Value

ACTIVATE NETWORK.

PREFIX_SPACE

This parameter determines if a digital display appears without prefix (+ −) and without the space that came instead. This can be accomplished by manually entering the parameter PREFIX_SPACE=NO into the wiztune.dat file. Restart Wizcon for changes to take effect.

Default Value

YES

RECIPEPERTAG

This parameter for recipe blocks enables the processing of values according to the tag associated with the appropriate address in the block. This mode is activated by selecting **Yes**. Restart Wizcon for changes to take effect.

This parameter is represented by the **Process each value according to its tag** field in the **General** tab of the *Recipes Properties* dialog. For more details, refer to the *Recipes Properties* section in *Chapter 17, Recipes.*

Default Value

YES.

SHOWDONEBAR

This parameter determines if the background processing dialog box will appear when large tasks (such as loading a large image) are being executed. The value can be YES or NO. Changes can be implemented online.

This parameter is represented by the **Show done bar** field in the **General** tab of the *Station Properties* dialog. For more details, refer to the *Station Properties* section in *Chapter 5, Getting to Know the Application Studio.*

Default Value

YES.

STARTUP_RECIPE

This parameter determines the name of a recipe that will be loaded upon Wizcon startup. Restart Wizcon for changes to take effect.

Note: The WizPro logger and alarm generator will be activated only after the specified recipe is loaded. If the load fails, see the file called ERRORS.RCP for a description of the failure.

This parameter is represented in the **Startup Recipe** field in the **General** tab of the *Recipes Properties* dialog. For more details, refer to the *Recipes Properties* section in *Chapter 17, Recipes.*

TRG_ACTIVATE

This parameter determines which trigger-object is activated when you click on overlapping trigger objects. The top or the bottom one. You can specify TOP for top, or BOTTOM for bottom. Restart Wizcon for changes to take effect.

This parameter is represented in the **State** field in the **Trigger** tab of the *Image Properties* dialog. For more details, refer to the *Image Properties* section in *Chapter 12, Image Editor.*

Default Value

TOP.

TRG_FEEDBACK

This parameter determines whether or not trigger objects will be highlighted when you click on the object and hold the mouse button down. If you specify YES, trigger objects will be outlined (with dashed lines) when they are selected. Restart Wizcon for changes to take effect.

This parameter is represented by the **Highlight: Trigger object** field in the **Trigger** tab of the *Image Properties* dialog. For more details, refer to the *Image Properties* section in *Chapter 12, Image Editor.*

Default Value

NO.

TRG_TEST_ON_MOVE

This parameter determines whether or not the mouse pointer will be highlighted when it is moved on top of a trigger object in an Image. Restart Wizcon for changes to take effect.

This parameter is represented by the **Highlight: Mouse pointer on triggers** field in the **Trigger** tab of the *Image Properties* dialog. For more details, refer to the *Image Properties* section in *Chapter 12, Image Editor*.

Default Value

NO.

VFI

Enables you to determine the format for tag history files by selecting Virtual File Interface DLLs. You may choose between VFI5CB or VFI5FST formats. Restart Wizcon for changes to take effect.

Note: VFI5FST can be used only for tag history files.

This parameter VFI is represented in the **VFI** tab of the *Station Properties* dialog. For more details, refer to the *Station Properties* section in *Chapter 5, Getting to Know the Application Studio.*

Default Value

VFI5CB for both tag and alarm history files.

VFI5FST_MODE_TIMESTAMPYES

This parameter enables the record of values with 'old' time stamps and the concurrent writing of history from two clients. For more details refer to the *New VFI Fast Mode* section in *Chapter 5, Getting to Know the Application Studio.* Restart Wizcon for changes to take effect.

Default Value

Yes.

Note: This is only available in version 7.01 and higher.

WIZ_STARTUPLOGO

This parameter determines the Wizcon logo display mode. The following options are available: Restart Wizcon for changes to take effect.

- **Yes** Until acknowledged by the user
- **No** Logo is not displayed
- **Timed** Logo is displayed for 3 seconds

This parameter is represented by the **Wizcon logo display mode** field in the **General** tab of the *Station Properties* dialog. For more details, refer to the Station Properties section in *Chapter 5, Getting to Know the Application Studio.*

Default Value

YES.

The changes you make in the Tuning Parameters utility are recorded in the WIZTUNE.DAT file. This file contains all of the Wizcon environmental parameters and their current values.

The WIZTUNE.DAT file is an ASCII file that can be edited using any text editor.

The following is an example of the WIZTUNE.DAT file:

```
*************************************************************
; FILE: WIZTUNE.DAT                                          *
; WIZCON ENVIRONMENT DEFINITION FILE                         *
; All atoms can be dynamically changed and retrieved by:     *
; WizGetEnv() and WizSetEnv() APIs.                          *
;************************************************************
;

;************************************************************
; Syntax:                                                    *
; Lines that start with ";" are comments, empty lines are    *
; ignored. Lines without the character '=' are also ignored. *
; Spaces before/after the '=' sign are not significant.      *
;************************************************************
;

;************************************************************
; Limitations:                                               *
; 1. Total number of lines (ALL lines) in the file is        *
;    limited to 200.                                         *
; 2. The name of an environment variable is limited to 32    *
;    characters.
*;************************************************************
*

;==================== Manager Variables ====================

; Automatic recover to last state after crash (power failure, etc.)
; Default is NO.
AUTORESTART=YES

; Default user when starting Wizcon
; Format is User.Password or "*" for last user.
; Default is "No User".
; For example:
DEFAULTUSER=hello.world

; Put Wizcon in the system task list?
; Default is YES.
INTASKLIST=YES
```

```
 Login & Logout alarm text.
; If missing, the corresponding alarm will not be generated.
; $U represents the current user name.
LOGIN_TEXT=$U logged-in.
LOGOUT_TEXT=$U logged-out.

: Determine if a message will appear after you made changes in
; a layout and then exited.
; Default is YES.
ASKSAVELAYOUT=YES

; Determine if the done-bar will appear for a large job execution.
; Default is YES.
SHOWDONEBAR=YES

;==================== Image VP Variables ====================

; Image update rate, in milliseconds.
; Defaults are: MinWait=10, MaxWait=2000.
IMGMINWAIT=10
IMGMAXWAIT=2000

; IMG: size of (collapsed) buffer for receiving msgs from WizPro.
; Must be in the range 5 to 500 (default is 100).
IMGWIZMSGBUF=100

; Define object blink rate parameters (fast, medium, slow).
IMG_BLINKRATES=500 1000 2000

; Determine if trigger object will be highlighted when selected.
; Default is NO.
TRG_FEEDBACK=NO

; Determine if clicking on overlapping triggers will activate
; the top or bottom object. Default is TOP.
TRG_ACTIVATE=BOTTOM

;================== Event Summary VP Variables =================

; Event Summary action when double-clicking on alarm.
; Can be ASSIST or ACK. Default is ASSIST.
ANN_DOUBLE_CLICK=ASSIST

;====================== WizPro Variables ====================

; WizPro Logger flush rate, in seconds (historic files.)
; Default is 30, maximum is 3600.
LGRFLSHTIME=30

; WizPro Logger buffer size, in lines (records) (historic files).
; Default is 124, maximum is 2048.
LGRBUFSIZE=124
: Alarm generator will not generate new alarms while condition is
TRUE
; and alarm is force-ended (or auto-ended), if this variable is
```

```
; set to YES. (Default is NO).
ALGEN_REGARD_STATE=NO

; WizPro will load this recipe, at startup.
STARTUP_RECIPE=LOADME.1ST

; ALARM_PRT_CONDENSE contains the escape sequence sent to printer
; before each alarm. Consists of decimal ASCII codes separated by
commas.
; For example, if the code ESC 7 (digit 7, ASCII 55) is to be sent,
; use ALARM_PRT_CONDENSE=27,55. If the variable is not defined,
; ASCII 15 (<Ctrl>O) is used. To suppress any condense character
; before alarms, use "ALARM_PRT_CONDENSE=".
; ALARM_PRT_2_LINES - if YES is specified, alarm printing will be
; divided into two lines, with alarm text on the second line.
ALARM_PRT_CONDENSE=15
ALARM_PRT_2_LINES=NO
```

Appendix D
VFI5FST (VFI Fast)

About this appendix:

This appendix describes the VFI5FST feature, as follows:

Advanced User Information, on the following page, provides information about the VFI5FST feature.

VFI5FST Tuning Parameters, on page D-3, describes the VFI5FST tuning parameters.

Note: This VFI5FST appendix is applicable to Wizcon 7 Version 7.01 and higher

Since Wizcon allows timestamps in drivers and on the Wizcon network, the records in VFI5FST data file can not be written sorted by time. If application does not use external timestamps (drivers that get values with timestamps from a PLC, add-ons that change tag values with their timestamp, programs that write historical records directly to the VFI5FST using the WizVfi… APIs, hot-backup configuration), data can be written sorted by time (that is in a standalone configuration).

VFI5FST uses a 'non-dense' time index file.

The index file holds a fixed number of indexes that point to record locations in the data file. The number of indexes is configurable (WIZTUNE.DAT parameter, see Appendix C for more information). Because the data file is not ordered, it holds two indexes for each time interval. One index which points to the first record with a time-stamp bigger or equal to the time of the index and one index which points to the last record with a timestamp smaller or equal to the time of the index.

If user has a history file for each day, and wants an index in this file for each minute - user will have a 1,440 minutes x 2 indexes/ minute x 4 bytes/index = 11,520 bytes index file (691,200 bytes if 1 index / second).

The number of time indexes used is determined when the file in created. Afterwards, when the file is used (read/write), this number of indexes will be used.

VFI5FST allows more than one process writing to history simultaneously (usually it is only one process —Wizpro logger).

For all the parameters described below, please make sure to restart Wizcon to apply changes.

LGRBUFSIZE **and** LGRFLUSHTIME

These parameters are common Wizcon parameters intended for tag history logging. See: *Objects / Tags / Properties / Wizpro Logger*

Buffer size - indicates the buffer size used for the Wizcon logger and for the write operations of the VFI5FST. Advised size: 2,048.

Flush rate – has a big influence on the amount of records written to the VFI in one write operation.

For more details, refer to the section *Defining Tag Properties*, in *Chapter 7, Tags*.

The parameters described below have no interface in Wizcon 7 Studio and can be added to WIZTUNE.DAT using any text editor.

VFI_DAYS_PER_FILE

The VFI_DAYS_PER_FILE parameter defines how many days will be combined in each physical VFI5FST file in the disk.

Default and recommended parameter: 1.

➤ **To define:**

Add to WIZTUNE.DAT file the next string:
VFI_DAYS_PER_FILE = n

Where **n** is number of days, maximum is 49 days / file for VFI5FST.

VFI5FST_IDX_SEC, VFI5FSTT_IDX_SEC

These parameters determine for each VFI5FST_IDX_SEC seconds a time index.

Default: 60 (1 index / minute).

These parameters determine the size of the GTddmmyy.IDT files. (For example: a value of 60 will give an index file of 11Kb, a value of 1 will give an index file of 675Kb).

It is recommended to use VFI5FST_IDX_SEC.
VFI5FSTT_IDX_SEC is used for backward compatibility only.

➤ **To define:**

Add to WIZTUNE.DAT file the next string:
VFI5FST_IDX_SEC = n

Where **n** is number of seconds between each time index.

VFI5FST_WRITE_BACK, VFI5FSTT_WRITE_BACK

These parameters define if the VFI5FST will make some optimizations in the history files while reading them (writing back of next record pointers).

Default: Optimization is performed.

To disable optimization during reading add to WIZTUNE.DAT file the next string:

VFI5FST_WRITE_BACK= NO

To enable optimization, remove this string from WIZTUNE.DAT.

Disabling this option results in a faster *first* reading with the chart (during chart opening), but slower the next readings.

It is recommended to use VFI5FST_WRITE_BACK. VFI5FSTT_WRITE_BACK is used for backward compatibility only.

VFI5FST_NO_COMM_ERR, VFI5FSTT_NO_COMM_ERR

These parameters define if to write communication error values to history.

Default: Communication error values are written to history. If this option is enabled, no communication error values will be written to the history files.

To enable this option (disable communication error values logging to history), insert the following line in the WIZTUNE.DAT file:

VFI5FST_NO_COMM_ERR= YES

To disable this option (enable communication error values logging to history) remove this string from WIZTUNE.DAT file

It is recommended to use VFI5FST_NO_COMM_ERR. VFI5FSTT_NO_COMM_ERR is used for backward compatibility only.

VFI5FST_MODE_TIMESTAMP, VFI5FSTT_MODE_TIMESTAMP

These parameters define if VFI5FST works in mode that supports un-sorted timestamps, or sorted timestamps only.

Default: This option is disabled – VFI5FST does not support not sorted timestamps during reading. For example, by default VFI5FST, during reading, considers that data file is sorted by time.

This option *must* be enabled if the following timestamps are used:

- A driver that gets values with timestamps from a PLC.
- An add-on that changes tag values with their timestamp.
- A program that writes historical records directly to the VFI5FST (using the WizVfi… API's)
- Hot-backup configuration.

If you have this option disabled but work in a configuration that needs this option enabled, strange behavior may occur in chart during reading. For example, the graph's lines go in a backward direction, jump from point to point backwards as well as forwards.

To enable this option, put following line in your WIZTUNE.DAT file:

VFI5FST_MODE_TIMESTAMP= YES

This option has a big influence on history reading speed. Especially, when the timestamps are scattered over the file (that is, totally un-sorted) history reading might become very slow.

To disable this option (disable in-sorted timestamps) remove this string from WIZTUNE.DAT file.

It is recommended to use VFI5FST_MODE_TIMESTAMP. VFI5FSTT_MODE_TIMESTAMP is used for backward compatibility only.

Appendix E
Wizcon DOS to Wizcon 7 Conversion Utility

About this appendix:

This appendix provides instructions on how to convert Wizcon DOS applications to Wizcon 7 for Windows, as follows:

Wizcon DOS to Wizcon 7 Conversion Utility, on the following page, gives an overview of the conversion utility.

Converting Wizcon for DOS application, on the following page, gives a step-by-step outline of the conversion process.

Wizcon DOS to Wizcon 7 Conversion Utility

The **Wizcon DOS to Wizcon 7 Conversion Utility** (WINCNV.EXE) provides an interactive process during which the primary components of the Wizcon application are converted to Wizcon 7 format. There is no need to first convert Wizcon DOS to Wizcon 5 and then to Wizcon 7.

Note: Direct Wizcon conversion is applicable from Wizcon version 7.02.

Converting Wizcon for DOS Applications

The following is a step-by-step outline of the conversion process for Wizcon for DOS applications to Wizcon 7 format.

1. Prepare Wizcon for DOS application for conversion.
2. Perform initial configuration in Wizcon 7.
3. Convert gates.
4. Convert templates.
5. Convert alarms.
6. Convert Reports
7. Perform manual conversion and adjustments of other components (Wizcon Language, generic add-on, etc.).
8. Test and adjust the converted Wizcon 7 application

The following sections describe the conversion process in detail.

Preparing the Wizcon for DOS Application

During this stage, the original Wizcon application will be prepared for conversion. The following steps are included in this stage:

1. Creating a new directory for your Wizcon DOS application.
2. Copying your Wizcon DOS application files from the original Wizcon directories to the new directory. Note that the application should be flattened in the new directory, (meaning without sub-directories).

It is highly recommended to transfer your entire Wizcon application to the flattened directory. However, the following files *must* be transferred:

- WIZ.BAT (initialization file)
- GATES.DAT (global gate data file)
- SET_UP.DAT (setup data file)
- *.GT@ (attached gate data files)
- *.PIC (template data files)
- *.FK@ (template specific function key data files)
- TXT*.DAT (text table data files)
- ALARMS.DAT (alarm data file)
- -*.* (recipe template and recipe files)
- RP*.DAT (report data files)

Note: Some application files may be located in sub-directories in Wizcon for DOS 4.0 or higher. For more details about file locations, see the Wizcon DOS User Manual.

Create a new Wizcon 7 application by starting Wizcon 7 in a new directory on your disk.

Before you begin the automatic conversion of gates and templates, user authorization and VPI parameters should be converted manually.

➤ **To manually convert user authorization and VPI parameters:**

User Authorization:

Define your users in Wizcon 7. It is recommended to keep the same user names. Unlike in Wizcon DOS, there is no authorization level in Wizcon 7. Instead, the final (converted) Wizcon 7 application will use user groups 1 to 9. For example, if a user was assigned authorization level 2 in the Wizcon DOS application, that user should be a member of user group 2 in Wizcon 7.

VPI Definition:

Define your VPIs in Wizcon 7.

Exit and restart Wizcon 7 to apply these settings.

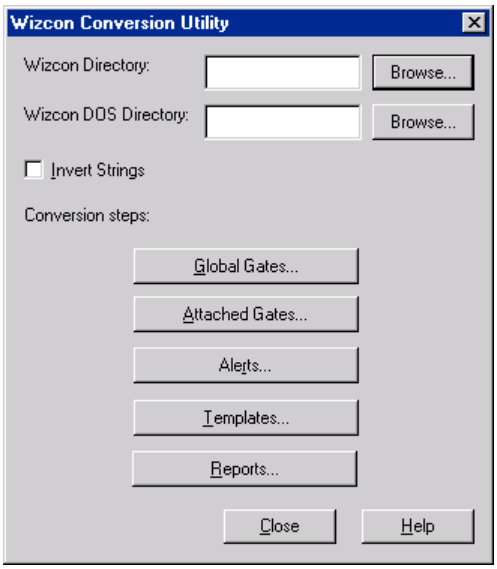
➤ **To activate the Wizcon conversion utility:**

Make sure that Wizcon 7 is running and invoke the conversion utility. You can use the command **WINCNV** at the command line,

Or

Click on the **Start** button on your desktop, point to **Programs** ⇨ **WizFactory** ⇨ **Wizcon** ⇨ **Dos2Win Conversion Utility**. Click on **Dos2Win Conversion Utility**.

The *Wizcon Conversion Utility* dialog appears:



The Wizcon Conversion Utility dialog is the main tool of the interactive conversion process. Each conversion operation is performed in the *Wizcon Conversion Utility* dialog, by activating the appropriate button. You can convert Gates (Global and attached), Alerts, Templates, and Reports.

Gate Conversion

All Wizcon global and attached gates can be converted to Wizcon 7 format.

Since Wizcon 7 does not recognize the term *attached gates*, all the Wizcon gates will be converted to normal (*global*) Wizcon 7 tag format.

In some cases, the conversion operation may cause name collisions, due to the fact that Wizcon 7 does not differentiate between attached gates and global gates. To prevent such collisions, a special mechanism is dedicated to the possibility of name collisions.

Note: Since Wizcon for Windows does not support the dot (.) character in gate names, this character will be changed to an underscore (_). For example, a gate called SILO.7 in DOS, will be converted to SILO_7 in Wizcon for Windows.

Global Gates

➤ **To convert global gates:**

To begin the conversion of global gates, activate the **Global Gates** button in the *Wizcon Conversion Utility* dialog, and wait for the conversion to complete. The conversion report (and error messages, if any exist) will appear in the *Global Gates Conversion* dialog:

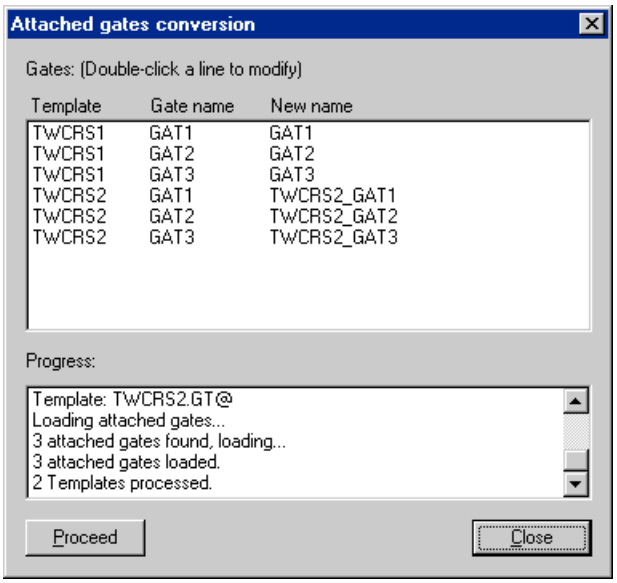
Check the results in the list and correct any errors (see troubleshooting guide later in this appendix). If errors occurred, correct them and repeat the step, as necessary.

➤ **To convert attached gates:**

The conversion utility converts Wizcon attached gates to regular Wizcon 7 tags.

Two conversion passes are executed. In the first pass, the attached gate files (**.GT@)* are scanned, name collisions (if any exist) are detected, and alternative names are suggested to resolve the conflicts.

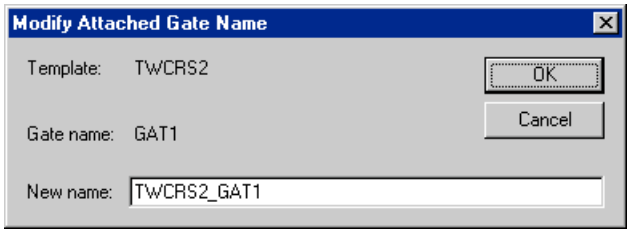
To begin the conversion of attached gates, press the **Attached Gates** button. The *Attached Gates Conversion* dialog appears:



Check the results in the **Progress** field and correct any errors. Repeat the step as necessary.

As you can see, a new name is suggested for each attached gate. When name collision is detected, the new name differs from the original name. You can change the suggested name by double-clicking a gate's line in the list.

The *Modify Attached Gate Name* dialog appears:



You can modify the new name in the **New Name** field.

Once you're happy with all the gates' names, activate the **Proceed** button in the *Attached Gates Conversion* dialog.

Check the results in the **Progress** field, repeat the step as necessary.

Gate Conversion Completion

All gate information is now converted. Before you proceed to the next step, you must first import the converted gate information into Wizcon 7:

➤ **To import converted gate information into Wizcon 7:**

1. In Wizcon 7, select the Tags item from the Design menu.
2. In the *Tag Definition* dialog, activate the **Use** button.
3. Select the converted global gates file (**WIZGTGLB.GLS**) and activate the **Replace** button.
4. Select the attached gates file (**WIZGTAT.GLS**) and activate the **Append** button.

Template Conversion

The conversion utility converts all Wizcon DOS templates to a single Wizcon 7 image, whereby each individual template becomes a zone in the converted image.

The image will be designed to provide as much Wizcon DOS functionality as possible.

The conversion utility will convert the templates smoothly, although conversion errors may occur due to the following reasons:

- Some or all of the gates were not converted properly, according to the procedure described in the gate conversion process above.
- Wizcon 7 (WizPro) was not updated along with the converted gates.
- Some template files are missing or were modified.

To prevent such errors, make sure that the gate conversion process was completed properly and the template files created by Wizcon DOS were not modified.

Colors

There are several differences pertaining to Wizcon 7 image and Wizcon DOS colors.

Wizcon DOS templates can have different background colors in different applications. Once you have converted your templates into a Wizcon 7 Image, you can change the background color of the image to be the same color you had in Wizcon DOS. You can do this by selecting **Edit⇨Set Background Color** from the Image menu.

Wizcon DOS colors are sometimes XORed with each other (as with text and dynamic elements). Wizcon 7 colors are not XORed.

The conversion utility uses two color tables to convert the Wizcon DOS colors to Wizcon 7 format. One table is used for text, the other for graphical elements.

If you want, you can change the values of a color table using customized color conversion files, such as CNVCOLOR, which is provided with the conversion utility in your Wizcon 7 directory.

Note that for template conversion, customized color conversion files should be placed in the new Wizcon 5 application directory.

The following is an example of a customized color conversion file:

```
GraphicsBlack = White
GraphicsBlue = LightBlue
GraphicsGreen = LightGreen
GraphicsCyan = LightCyan
GraphicsRed = LightRed
GraphicsMagenta = LightMagenta
GraphicsBrown = DarkYellow
GraphicsLightGray = DarkGray
GraphicsDarkGray = LightGray
GraphicsLightBlue = Blue
GraphicsLightGreen = Green
GraphicsLightCyan = Cyan
GraphicsLightRed = Red
GraphicsLightMagenta = Magenta
GraphicsYellow = Yellow
GraphicsWhite = Black
TextBlack = Transparent
TextBlue = LightBlue
TextGreen = LightGreen
TextCyan = LightCyan
TextRed = LightRed
```

```
TextMagenta = LightMagenta
TextBrown = DarkYellow
TextLightGray = DarkGray
TextDarkGray = LightGray
TextLightBlue = Blue
TextLightGreen = Green
TextLightCyan = Cyan
TextLightRed = Red
TextLightMagenta = Magenta
TextYellow = Yellow
TextWhite = Black
```

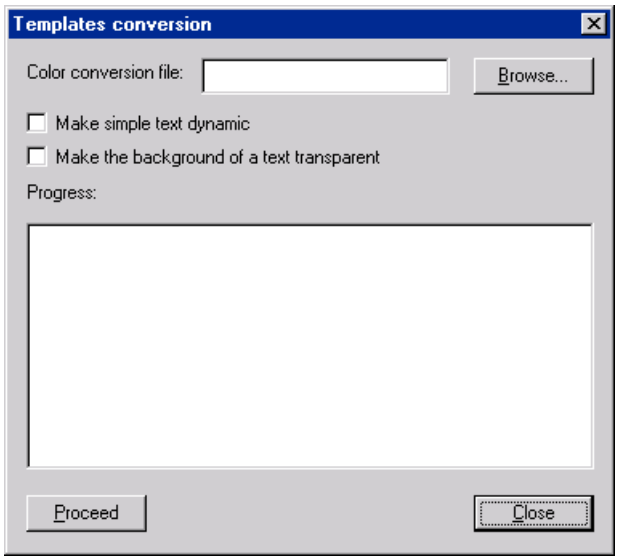
Each line in this file describes a single color conversion. Different keywords are used for text and graphic colors. The first word in each line describes the original color, and the second word describes the target (converted) color.

Note that using the default color settings will result in optimum compatibility with the background color in Wizcon for DOS applications. It is therefore recommended, if you are using the default colors, to change the background color of your Wizcon 7 image to match the background color of the Wizcon application. This will improve image clarity.

The CNVCOLOR sample file will provide the best possible results when converting from a black background in Wizcon to a white background in Wizcon 7.

➤ **To convert templates:**

To convert templates, activate the **Templates** button. The *Templates Conversion* dialog appears, as follows:



If you want to use a customized color conversion file, specify the name of the file in the **color conversion file** field.

To make text dynamic select the **Make simple text dynamic** option.

In Wizcon for DOS the user could write simple text above a dynamic object and it is seen, but in windows, the user can't write simple text on top of a dynamic object. This is because a dynamic object will always be on top of a simple object (no matter which object was drawn first).

This version solves the problem by offering the user the option to check (✓) in the check box if he wants the conversion utility to make all simple text a dynamic object. When Wizcon converts the gates, it creates the tag PC_SHOW. **Do not erase this tag!!!!**

Select the **Make the background of a text transparent** option to make the background of text transparent.

Press the **Proceed** button and the templates conversion will begin.

Upon completion of the operation, check the results in the **Progress** field and correct any errors. Then, repeat the operation as necessary.

Importing the Converted Image Into Wizcon 7

➤ **To import the converted image into Wizcon 7:**

1. In Wizcon 7, open a new image.
2. In the Image select File ⇨ Import ⇨ ASCII file (*.ILS)from the Image menu.
3. In the ASCII file listbox, select the **CNVIMAGE** image (which may take some time to load).
4. After the image is loaded, select the *Save As* item to save the image with a name other than ~CNVIMAG.IMG.

A Wizcon 7 image now exists, with a zone for each converted template.

Maximize the image and select the **Goto Zone** item to navigate between the zones. Make sure that each zone appears correctly.

At this point, the colors in your image may not appear clearly. To correct color appearance, change the background color as explained above.

*Note**: If you decide to repeat the template conversion operation at this point, close the image before you activate the Templates button again.*

Function Keys

Function key assignments are not converted to Wizcon 7.

However, a substitute is provided for function keys that performed the Load Template operation. This substitute will enable you to navigate more easily in the converted application. In the bottom section of any zone that included such function keys, blue boxes called **GoTo** will appear. Each of these boxes is a trigger object that can be activated for navigation in the converted application.

Each GoTo trigger replaces a set of function keys for a specific authorization level. If you converted your user information correctly (meaning that every user is a member of only one group from 1-9, that represents the user's original authorization level), only one GoTo trigger object will appear for each user.

Like the Wizcon function keys, the GoTo trigger will enable quick and convenient access to the relevant zones.

Miscellaneous

Digital Display without space and prefix

Until now, when a user created a digital display on a gate value and didn't choose '+ Prefixed' Wizcon saved a space instead of a +/- sign. The PREFIX_SPACE=NO parameter offers the user to create a digital display without prefix and without the space that came instead. This can be accomplished by manually entering the parameter into the wiztune.dat file

PREFIX_SPACE=NO

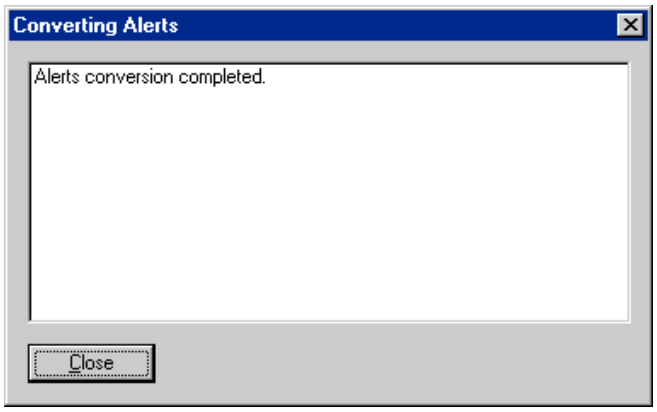
(Default is YES)

Points as trigger objects

In Wizcon for DOS a point could be a trigger object and it was easy with the arrows to move to the exact pixel and activate the trigger. In windows, we are using the mouse and it's difficult to point to the exact pixel.

This version of the utility solves the problem by drawing these trigger points as small filled circles that are easy for the user to point to with the mouse.

To convert Wizcon alerts to Wizcon 7 alarms, activate the **Alerts** button. The *Converting Alerts* dialog will appear:



Check the results in the list and correct any errors. Then, repeat the operation as necessary.

➤ **To import the converted alarms into Wizcon 7:**

1. In Wizcon 7, select the Alarms item from the Design menu.
2. In the *Alarms Definition* dialog, activate the **Use** button.
3. Select the converted alarms file CNVALRT, and activate the **Replace** button.

To preserve the original colors of the alarms, your Wizcon 7 Events Summaries should be configured with the correct color settings. An Events Summaries called CNVAN is provided with the conversion utility as an example. If you want, you can copy the color settings in CNVAN to other Events Summaries.

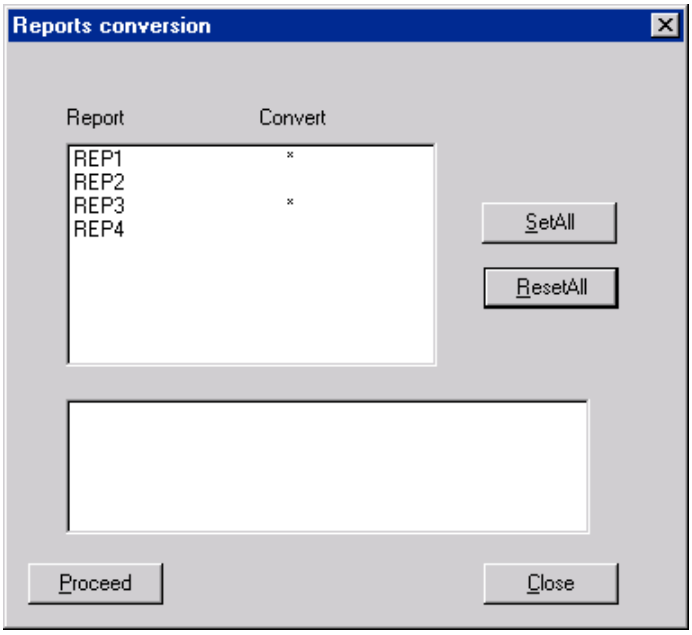
Report Conversion

Reports can be converted to Wizcon 7 reports, starting from version 7.02. The conversion is done on the RPD*.DAT files only. This conversion applies to languages that some or all of their letters' ASCII code are higher than 128.

➤ **To convert Wizcon DOS reports to Wizcon 7:**

To being the conversion, press the **Reports** button in the *Wizcon Conversion Utility* dialog.

The *Converting Reports* dialog appears:



In the first List Box there is a list of all the reports that the user created in DOS. Double-click on a report will set the selected report with an asterisk (*) meaning that this report will be converted. A second double-click will reset this report and it won't be converted.

Or

Press the **SetAll** button to mark all the reports with an asterisk (*) and they will all be converted.

Press the **ResetAll** button to erase the asterisks (*) that exist.

The Second List Box will show the progress of the conversion's process.

Final Adjustments

The following paragraphs describe the final adjustments required to complete the template conversion process.

Wizcon 7 Fonts

The converted image uses five predefined fonts, designed to replace Wizcon DOS fonts as accurately as possible. However, in some applications, other fonts may be more appropriate. If you want, you can change the converted image fonts. Note, however, that when a font is changed, any text object in the image that appears in that font will also change. For more information about changing image fonts, refer to *Chapter 12, Image Editor*.

Wizcon Language in Wizcon 7 is different from the Wizcon Language in Wizcon for DOS. The differences between them are listed below.

Tasks performed by Wizcon Language in Wizcon for DOS, can be performed much more easily and efficiently by custom application modules in Wizcon 7.

➤ **To convert Wizcon language commands to Wizcon 7 format:**

1. Copy the files **ECL.DAT** and **SET_UP.DAT** from your Wizcon DOS applications to the Wizcon 7 directory.
2. Start Wizcon 7.
3. Select the Wizcon Language item from the Design menu. And then select the Definition item.
4. Activate the **Save** button to save the corrected Wizcon Language commands. At this point, a number of errors might occur, due to the differences in the Wizcon Language of Wizcon for DOS and Wizcon 7. Correct these errors by replacing or deleting the commands that contain unsupported features in Wizcon 7.

The following list of Wizcon Language features are supported in Wizcon for DOS, but *not* in Wizcon 7:

Predefined Variables
$ACK
$KEY
$TEMPLATE
$LEVEL
$STATION
$END
$EVENTSCR

Operators
TABLE

Commands
SETBIT
RESETBIT
LOAD
CSHELL
WINDOW_MEM_ON
WINDOW_MEM_OFF
CHART
PRTSC
EVENTS
ACKALARM
ENDALARM
COMERR
HELP
EXIST

Generic Application Module

Several trigger operations supported in Wizcon for DOS are *not* supported in Wizcon 7. A special generic application module was designed to convert these trigger operations.

Wizcon 7 trigger objects will communicate with the add-on program through simple gate assignments, and the program will perform the operations for the triggers. A special dummy gate called CNVADDON will be defined during gate conversion. This gate will be used by the generic add-on program.

The operations supported by the generic add-on program include:

- Recipe save
- Recipe load
- DOS commands
- Chart activation
- Report activation

The generic add-on program uses an initialization file that describes the operations required in the converted application. This file, called CNVADDON.DAT, will be generated during the template conversion process. Make sure that this file exists in your Wizcon 7 directory before you continue. The file will be located in your Wizcon 7 directory, unless severe errors occurred during template conversion.

Charts

Since charts are not converted automatically, and the generic add-on supports chart activation, you must first convert charts manually before they can be activated by the add-on. To do so, define a Wizcon 7 chart for each Wizcon DOS chart, and edit the CNVADDON.DAT file:

Locate the lines in the CNVADDON.DAT file that refer to chart activation (marked clearly in the file), and replace the chart name and parameters with the name of the chart you defined for that chart. For example, if your Wizcon application included a chart called PRDDL, and you defined a Wizcon 7 chart called CHVP1 to replace the Wizcon chart, you would edit the following line in the CNVADDON.DAT file:

```
103 ActivateChart [prddl 12-1 11:00] <== Replace with
the name of a Chart!
```

Edit the line as follows:

```
103 ActivateChart CHVP1
```

In the example above, the old chart name and parameters, and the comment "<== Replace..." were replaced with the chart name. Note that the brackets ("[" and "]") must also be deleted.

Application Module Integration

To integrate the generic application module in your Wizcon 7 application, simply add it to the Wizcon 7 loader. In the Wizcon Manager, Select **Application Setup** form the **Design** menu.

Recipe Model Descriptions

Since recipe models do *not* exist in Wizcon for DOS, the models for your recipes are created during the conversion procedure. For each model, the description is copied from one of the recipes of that model. After the conversion operation, it is recommended to review the list of models and change their descriptions so that each model will have a unique description.

The following Wizcon DOS components are not supported by the conversion utility. If you are not familiar with Wizcon 7, it is important to learn the Wizcon 7 features that can replace the unsupported Wizcon features more effectively.

Setup information

All the information in the Configuration and Setup modules of Wizcon for DOS (including the MENU.DAT and WIZCFG.DAT files, if they existed).

Gates

$$RECORD and $$WAIT gates are not supported by Wizcon 7.

Alarms

Multiple color alerts are not supported by Wizcon 7. Each alert has only one set of colors (foreground and background).

The @@!*gate* feature is not supported by Wizcon 7 alerts.

The alert print control file ALARMS.PRT is not supported by Wizcon 7.

The environment variable WIZALERTLPT is not supported by Wizcon 5

The following predefined variables are not supported by Wizcon 7:
$ACK
$END
$STATION
$EVENTSCR

Charts

Charts should be converted manually.

Templates

Background bitmaps will not be converted.

Graphical segment libraries will not be converted.

"Line style" and "Line width" graphical attributes are not supported by Wizcon 7.

Blinking drum gates will not automatically be converted, It is recommended not to fill your Wizcon 7 images with blinking elements, since this will significantly degrade system performance.

The *point of reference* concept does not exist in Wizcon 7.

In Wizcon for DOS, dynamic elements and text are drawn in the XOR mode. In Wizcon 7, all graphics are drawn in the REPLACE mode. This may distort the visibility and colors of some elements. As a partial solution, you can use customized color conversion files (described earlier in this appendix).

Wizcon 7 triggers are not marked with asterisks (*). As mentioned above, they are always drawn in the REPLACE mode.

Only Load Template function key assignments will be converted to Wizcon 7 triggers (as mentioned in the section called **Template Conversion**, earlier in this appendix).

Troubleshooting

The following paragraphs describe the errors that may occur during each step, and possible solutions. The errors are displayed in Bold.

Global Gate Conversion

1. File not found: WIZ.BAT

   Action The WIZ.BAT file is missing. Make sure that it exists in your flattened Wizcon DOS application directory.

2. **Could not open file GATES.DAT**

   Action: The GATES.DAT file is missing. Make sure that it exists in the flattened application directory.

   This message may also indicate that the GATES.DAT file is already being used by another application. In this case, close the application using the file, and repeat the step.

3. **No global gates found. Global gates table not initialized.**

   Action The GATES.DAT file is empty. Make sure that the correct file (from your original Wizcon DOS application) is in the flattened application directory.

4. **Global gates table not initialized. (without preceding message)**

   Action The utility could not initialize the table, due to memory allocation problems (the most probable cause being that there was not enough memory). Close some applications and re-run the utility.

5. **Error while loading gate No.** *gate number*.

   Action The gate file was found to be corrupted. Return to the Wizcon for DOS application and save the gate information again.

6. **Error while writing file WIZGTGLB.GLS.**

   Action Make sure that a file with the same name is not being used by another application.

First Pass of Attached Gate Conversion

7. **No templates found.**

   Action There are no *.GT@ files in the directory. No files were converted.

8. **Could not open file *filename*. Attached gates table not initialized, ignoring template.**

   Action Make sure that the file is not being used by another application.

9. **No attached gates found. Attached gates table not initialized, ignoring template.**

   Action The attached gates file is empty. Make sure that the correct file (from your original Wizcon DOS application) is in the flattened application directory.

10. **Attached gates table not initialized, ignoring template.**

    Action The utility could not initialize the table, due to memory allocation problems (the most probable cause being that there was not enough memory). Close some applications and repeat the step.

11. **Error while loading gate No. *gate number*.**

    Action The gate file was found to be corrupted. Return to the Wizcon for DOS application and save the gate information again.

Second Pass of Attached Gate Conversion

12. **File not found: WIZ.BAT.**

    Action The WIZ.BAT file is missing. Make sure that it exists in the flattened application directory.

13. **Could not open file GATES.DAT.**

    Action The GATES.DAT file is missing. Make sure that it exists in the flattened application directory.

    This message may also indicate that the GATES.DAT file is already being used by another application. In this case, close the application using the file, and repeat the step.

14. **No global gates found.**

    Action The GATES.DAT file is empty. Make sure that the correct file (from your original Wizcon DOS application) is in the flattened application directory.

15. **Global gates table not initialized.**

    Action The global gates table could not be initialized, due to memory allocation problems (the most probable cause being that there was not enough memory). Close some applications and repeat the step.

16. **Error while loading gate No. *gate number*.**

    Action The gate file was found to be corrupted. Return to the Wizcon for DOS application and save the gate information again.

17. **Attached gates table not initialized, ignoring template.**

    Action No gates were found in the GT@ file specified in the cross-reference file. Another cause may be a memory allocation error.

18. **Error while writing file: WIZGTATH.GLS.**

    Action Make sure that the WIZGTATH.GLS file is not being used by another application.

Template Conversion

19. **CNVCOLOR: Syntax error in Line No. *line number***

    Action The format of the specified line (in the CNVCOLOR file) is incorrect. Correct the line, or use the default color conversion tables.

20. **CNVCOLOR**: Unknown color "*keyword*" in line No. *line number*

    Action An illegal color name appears in the specified line. Correct the line, or use the default color conversion tables.

21. **No templates found!**

    Action No .PIC files were found in the flattened application directory. Copy them from your original Wizcon DOS application.

22. **Unexpected error: Gate *gate name* does not exist**

23. **Unexpected error: Could not get limits of Gate *gate name***

    Action A problem exists with the Wizcon 7 gate database. Close the conevrsion utility, Exit and restart Wizcon 7, then retry.

    If the error persists, reload the gate information from the original (unmodified) .GLS files generated by the gate conversion utilities.

    If the error still persists, shut down and restart your system.

24. **Error while writing to CNVZONES.INC, aborting**

25. **Error while writing to Add-On Data file**

26. **Error while writing to ILS file**

    Action Shut down and restart your system, and then try the template conversion again.

27. **Error in text table file *file name,* Line No. *line number***

    Action Make sure that you have the original (unmodified) text table file from the Wizcon DOS application, in your flattened application directory.

Alerts Conversion

28. **Alerts table not initialized**

    Action Make sure that the ALARMS.DAT file exists in the Wizcon DOS application directory. Then, run Wizcon DOS and save the alarms again.

29. **Memory allocation error.**

    Action The system is overloaded. Close some OS/2 applications, and retry

30. **Help file ALARM2.HLP not present - no help information conversion.**

31. **Help file ALARM2.HLP is empty - no help information conversion.**

    Action These messages will appear if you do not have any alarm help information for your Wizcon DOS alarms, and should be ignored. If you do have alarm help information, the ALARM2.HLP file is in error. Make sure that it exists in the Wizcon DOS application directory.

32. **Warning: Could not create Help File *filename***

    Action System overloaded or another application is using the file. Shut down and restart.

33. **Warning: bad file structure - ALARM2.DAT.**

    Action Run Wizcon DOS and save the alarm information again.

34. **Error: Could not initialize alerts file CNVALRT.ALS, Aborting.**

    Action System overloaded or another application is using the file. Shut down and restart.

After you integrate the generic add-on program into your application (as described earlier in this appendix), it will automatically be activated whenever your Wizcon 5 application is invoked. Any message, including error messages, will be sent to a log file called CNVADDON.LOG. This file will be deleted whenever Wizcon 7 is invoked, so that it will always contain only messages from the last Wizcon 7 session.

The messages will also be displayed in a window, associated with the application module. This window will appear in the background and can be located using the Windows Task Bar.

The messages that may be sent include the following:

35. **WIZPRO not loaded**
36. **Gate CNVADDON not found**
37. **Could not request messages for gate CNVADDON**
38. **Data file "CNVADDON.DAT" not found**
39. **Initialization fault**

    Action These are initialization errors. Make sure that the CNVADDON.DAT file is located in your Wizcon 7 directory, the CNVADDON gate is defined, and WizPro is running properly.

40. **Error: Could not create semaphore**
41. **Memory allocation error**

    Action These are system errors that will only occur if your system is extremely overloaded. Close some applications and retry.

42. **Could not open chart *chart viewport name***

43. **Could not write value to gate CNVADDON**

44. **Could not load recipe *recipe name,* Error code *error code***

45. **Could not save recipe *name,* Error code *error code***

    Action These are WizPro errors. Make sure that the relevant recipe or chart exists, and that WizPro is running properly. If necessary, exit and restart Wizcon 7.

46. **CNVADDON Lost contact with WIZPRO, Terminating**

    Action This message will appear when you exit Wizcon 5. No action is necessary.

Appendix F
Networking with OPC Using DCOM

About this appendix:

This appendix provides instructions for accessing data from remote OPC servers using DCOM, and explains how to troubleshoot DCOM problems with OPC servers.

Distributed COM (DCOM) is the technology that allows COM objects to communicate over a network. OPC servers are COM objects; therefore, you can configure and use DCOM for connections to remote OPC servers.

DCOM is included in Windows NT 4.0, and can be added to Windows 95 or 98. You can download DCOM from the Microsoft site (http://www.microsoft.com/) or find it on Microsoft developer products such as VC++.

Connecting to remote OPC servers requires more steps than connecting to local OPC servers. This application note provides instructions for accessing data from remote OPC servers using DCOM, and explains how to troubleshoot DCOM problems with OPC servers.

For these instructions, you use the Modbus Sample server as the OPC server and the OPC Inspector as the Windows client.

Note: *You can download these programs from the FactorySoft Web site, http://www.factorysoft.com/.*

Making OPC Connections

DCOM is an extension of COM that is mostly transparent to the individual COM objects.

OPC servers do not know that the client application may be on another computer, and OPC client applications know they are using a remote server only if they specify another computer name when they connect to that server.

When You Can't Make OPC Connections

There are 3 common reasons that an OPC Client may not be able to connect to a remote OPC Server:

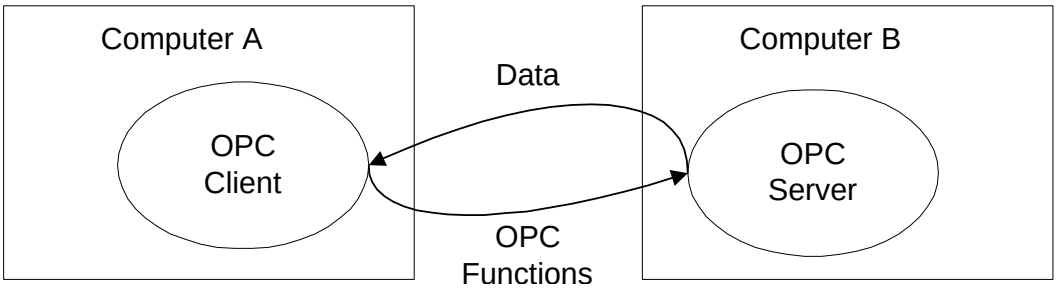
- **OPC proxy dlls are not installed on one of the computers.** OPC proxy dlls must be installed on both the client and server computers or nothing will work.

  You can use the OPC Inspector to verify if the proxy dlls are installed. In the OPC Inspector configuration, right-click the local computer or remote computer and select Properties. The properties show the location of the proxy dlls and identify if they are OPC 1.0 or 2.0 compatible.

- **Windows NT service pack mismatch.**
  Each NT service pack contains DCOM problem fixes. If different service packs are installed on two computers with Windows NT, OPC will not work properly. Although a client may be able to connect to a server, not all of the functions will work. Also, many times OPC seems to work, but no data is sent back to the client application.

  Service Packs 3 and 4 work for OPC if both computers are at the same level. Do not mix different levels and do not use service pack versions before Service Pack 3.

- **Security is the most common reason that OPC fails over DCOM.**
  The rest of this note explains how to configure DCOM security.



OPC Client/Server Communications

Security for Windows NT and DCOM

DCOM employs the extensible security framework provided by Windows NT. In the same way that a Windows NT user needs to be defined in Windows NT security to access that operating system, an OPC client user needs security rights on the remote OPC server to access data from that server.

When an OPC client tries to connect to an OPC Server, Windows NT asks the client the following questions:

“Who are You?” (Authentication Level)

“Can you launch this server?” (Launch Permissions)

“Can you access this server?” (Access Permissions)

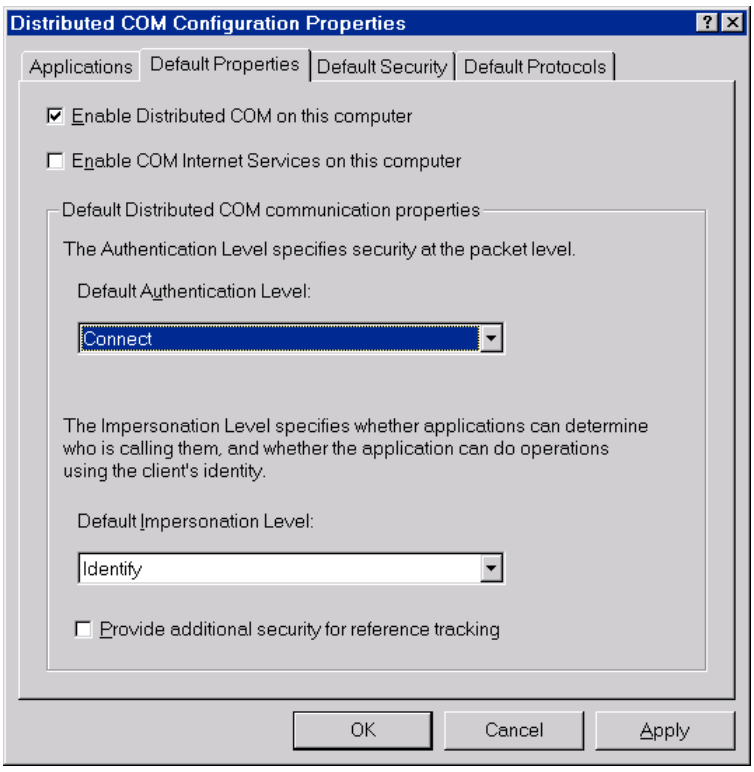
“How should I run this server?” (Server Identity)

When an OPC server tries to send data back to the OPC client, Windows NT asks the same questions. If the security allows the client to connect, but no data is returned, the security on the client computer may be the problem.

Configuring DCOM

You use the DCOMCNFG.EXE program to configure DCOM. This program is installed, by default, in the system folder of your Windows NT computers, and can be installed with DCOM for Windows 95 and 98 users.

When you run DCOMCNFG program, the Distributed COM *Configuration Properties* dialog box appears. You use this dialog box to configure DCOM security.


Distributed COM Configuration Properties
Applications
Default Properties
Default Security
Default Protocols
Enable Distributed COM on this computer
Enable COM Internet Services on this computer
Default Distributed COM communication properties
The Authentication Level specifies security at the packet level.
Default Authentication Level:
Connect
The Impersonation Level specifies whether applications can determine who is calling them, and whether the application can do operations using the client's identity.
Default Impersonation Level:
Identify
Provide additional security for reference tracking
OK
Cancel
Apply

Distributed COM Configuration Properties

Default Properties

The *Enable Distributed COM on this computer* option enables DCOM on the computer. This defaults to selected (DCOM enabled).

Windows NT uses the *Default Authentication Level* for user authentication, as follows:

Default Authentication	NT Operation
None	NT does not use security
Connect	(Default setting) The operating system must know the program's "user context".

For example, if you run an OPC client on Computer A, the client's context is your login and password. (Although sometimes an OPC client application may run as a service or in another context.) Regardless of the client's context, Computer B authenticates its login name and password, unless its *Default Authentication Level* is set to None.

If Computer A (the OPC client) is running Windows 95 or 98, there is no security and the *Default Authentication Level* should be None on Computer B.

If both Computer A and Computer B are running on Windows NT, and the *Default Authentication Level* is Connect, Computer B must know Computer A's context or it will fail.

Different or Same Domains

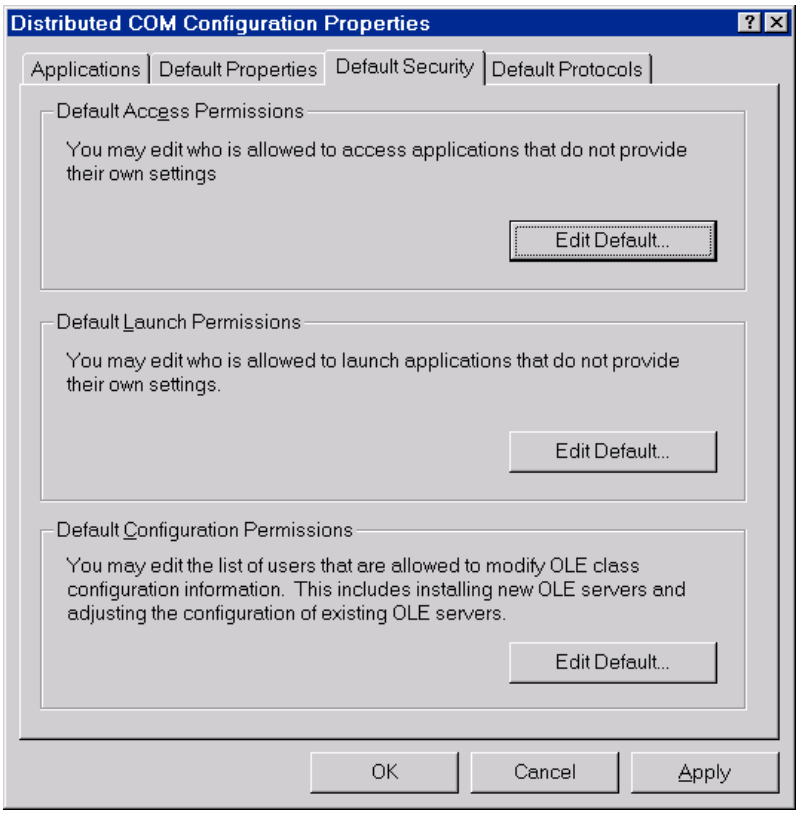
When both Computer A (OPC Client) and Computer B are in the same domain, they automatically know each other's logins.

If Computer A is not part of the same domain as Computer B, then Computer B needs an identical user account (that is, an identical login and password) or set the *Default Authentication Level* to None.

If your computer is running using Windows 95, 98 or NT, and it is not part of the same domain, set the *Default Authentication Level* to None.

Default Security Page

You use the *Default Security page*, as shown below, to edit the security that applies to all COM objects on this computer. Any security settings defined on a per-server basis override these security defaults; otherwise, DCOM security uses these default settings.

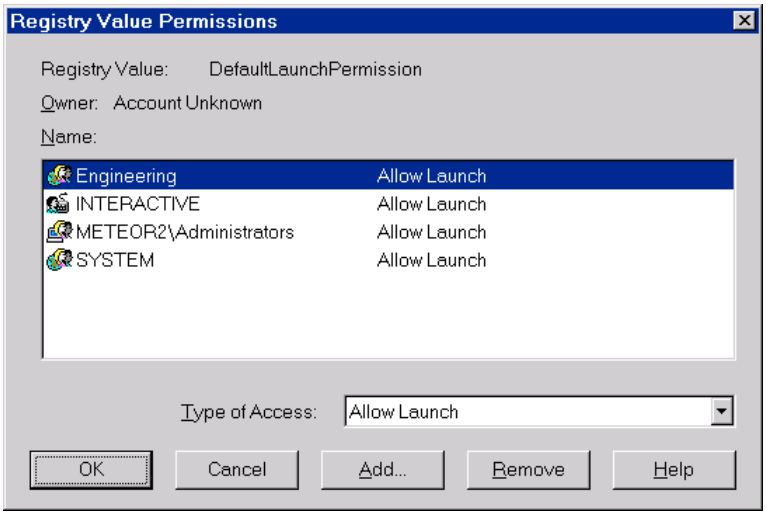

Distributed COM Configuration Properties
Applications
Default Properties
Default Security
Default Protocols
Default Access Permissions
You may edit who is allowed to access applications that do not provide their own settings
Edit Default...
Default Launch Permissions
You may edit who is allowed to launch applications that do not provide their own settings.
Edit Default...
Default Configuration Permissions
You may edit the list of users that are allowed to modify OLE class configuration information. This includes installing new OLE servers and adjusting the configuration of existing OLE servers.
Edit Default...
OK
Cancel
Apply

Distributed COM Configuration Properties

Default Access Permissions
Default Access Permissions specify which users can access or connect to a server.

Permissions are based on either users or groups. It is advised that you specify permissions for groups first, and then add user accounts to those groups. When a domain includes many users, this approach allows each server computer to give access permissions to the group of OPC users; otherwise, each user must be given permissions on each computer running a server.

Default Launch Permissions
Launch Permissions specifies which users can launch a server. If a server is already running, this default setting does not apply. For example, this limit does not apply for servers that run automatically or ones that are already started manually.



Registry Value Permissions for Launch Permissions

Default Protocols

(Applies to NT Service Pack 4 and later.) This page lists all protocols DCOM uses.

By default, this page lists every protocol so that DCOM will work on as many networks as possible. When a network node becomes inaccessible (for example, a cable is unplugged or a router goes down), DCOM times out when trying to communicate with that node. Since DCOM tries every protocol listed in this page, the more protocols listed, the longer the timeout period. To reduce the time when network errors occur, remove any unnecessary protocols.

Applications

The Applications page lists the OPC servers and other COM objects registered on this computer. OPC servers are listed by description, not by ProgID (the name many OPC clients display when connecting to a server). For example, FactorySoft.Sample is the name used to connect to the sample Modbus server, but DCOMCNFG shows “FactorySoft Modbus OPC Sample”.

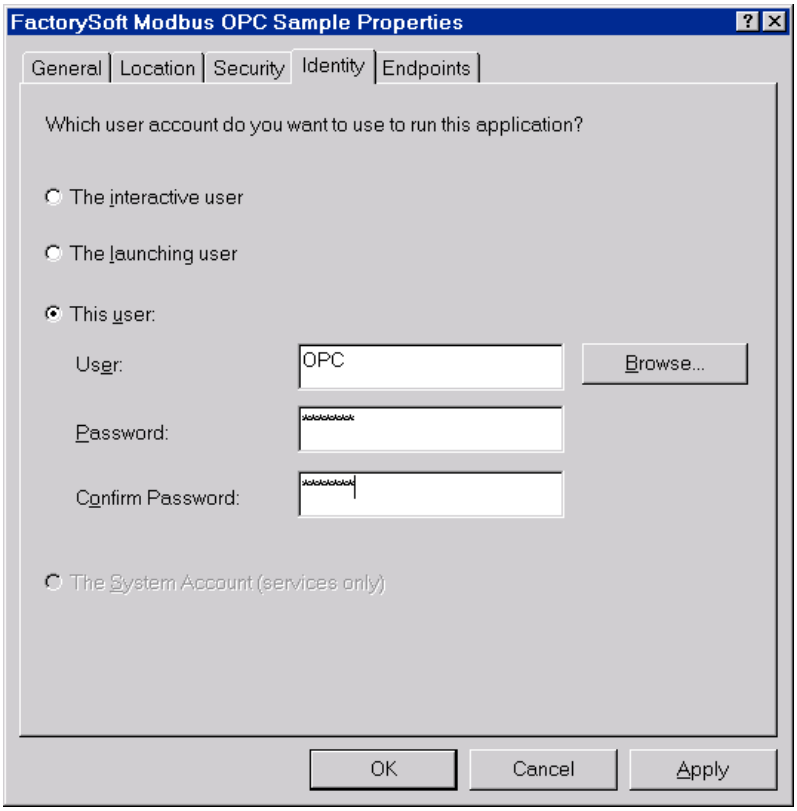
To configure a server, double-click it or select its properties and use the following tabs.

General
Lists some information about the server. In SP4, it also sets the authentication level of this server.

Location
Specifies where a server is to run. Use the default, “Run application on this computer”.

Security
Allows the default launch and access permissions to be overridden for this server. This setting works just like setting the default permissions.

Identity
Changes how the server should be run.



Identity Properties for FactorySoft Modbus OPC Sample server

By default, the computer runs as the launching user. This means the server runs in the context of the client user. For each client that connects, an instance of the server launches. These instances are not in the context of the current user on the server computer; therefore, the servers are invisible on the server computer. The Task Manager shows multiple instances of the server running, which is not how OPC servers are usually intended to run.

- Interactive User runs this application…
  Only one instance of the server runs, and its window is visible. Either the user (manually) or COM (automatically) can launch the server. All clients connect to this server instance.

  If this is the selection, the user cannot log off without stopping the server and the server cannot run unless a user is logged on.

- This User runs this application…
  (The alternative to the Interactive User selection.) This option specifies a user context to run under, regardless of the current user logged into the computer.

Short-Term Security Problem Resolutions

Same User Logon

For testing purposes, the easiest resolution is to have the same user log onto both machines. Using this method provides the same security access and rights for both computers, and the machines recognize each other.

Disable DCOM Security

Another resolution is to disable DCOM security altogether. As with having the same user logon to both machines, this resolution may proves useful for testing or demonstration purposes when real security is not an issue.

➤ **To disable DCOM security:**

1. On the OPC client machine, run DCOMCNFG.

2. Set the Default Authentication Level to (None) on the Default Properties tab.
3. On the OPC Server machine, run DCOMCNFG.
4. On the Default Properties tab, selected None for the Default Authentication Level.
5. On the Default Security tab, add the groups “Everyone” and “Network” to both the Default Access Permissions and Default Launch Permissions Access Control Lists.

With these settings, the domain setup (if any) and the ID for each machine’s login user will be of no importance.

Long-Term Security Problem Resolutions

For real-life process solutions, however, you should not disable DCOM security: and more than likely, the client and server users will have different logons. This section explains how to configure the client and server to communicate OPC data with DCOM security intact.

To demonstrate how OPC clients and servers can communicate data across a network, you need to install the OPC Inspector and Modbus Server on separate computers. When DCOM security is configured correctly, you will be able to use the OPC Inspector to access data items from the Modbus Server.

How you configure DCOM depends on if the local and remote machines are located in the same domain, or in different or no domains.

➤ **To add new users for same domain OPC communications:**

1. Install the Modbus server on one computer.
2. Install the OPC Inspector on another, networked computer in the same domain.

3. On the Modbus server computer, run dcomcnfg.exe. This program is installed, by default, in the winnt\system32 folder.

The *Distributed COM Configuration Properties* dialog box appears.

4. In the Applications page, double-click the FactorySoft Modbus OPC Sample.

The FactorySoft Modbus OPC Sample Properties dialog box appears.

5. Click the Security tab.
6. Select Use custom access permissions and click Edit.

The Registry Value Permissions dialog box appears. This dialog box shows the groups and users currently defined with access permission for the selected Modbus OPC server.

7. Click Add.

The Add Users and Groups dialog box appears.

8. In the Names list box, select the new users or groups to permit server access. Press SHIFT to select multiple users or groups.
9. Click Add. The selected users or groups appear in the Add Names list.
10. Make sure the Types of Access box shows Allow Access.
11. Click OK.
12. Start the Modbus Sample server.

Note: DCOM changes do not take effect while server is running. Make sure the Modbus OPC server is not running when you modify DCOM security; otherwise, you need to restart the server.

13. Start the OPC Inspector installed on the remote computer.
14. Add the Modbus Sample server to the Configuration group. The OPC Inspector connects to the Modbus Sample server automatically.

To view data items in that server, create a group in the configuration and add the desired items to that group. Refer to the Modbus Sample Help for more information on configuring and using server data groups.

Other Hints:

If a server is registered with a network drive in the path (such as "r:\shared\servers\myserver.exe"), a local user can run the server while DCOM cannot. Make sure servers are registered without network drives in the path for DCOM to be able to launch them.

Appendix G
Wizcon ASCII (ILS) File Format

About this appendix:

This appendix describes the structure and format of the Wizcon for Windows and Internet ASCII (ILS) file.

This document defines the format of the ILS file that can be created from the Image. The ILS file is an ASCII file, that includes the descriptions of the Image and of all its objects.

The following editing points should be noted:

- Image ASCII files support #include statements. For example:

```
VERSION: 7.0

LAYERS:
"BASE"       1 2048 GROUP=0xffffffff

#include "LAYERS.ADD"
```

- Comments can be inserted in one of two ways: using a semicolon (;) anywhere in the line, or by using **/*** to denote the beginning of a comment and ***/** to denote the end of the comment.

  If you use a semicolon, the comment will be considered from the semicolon until the end of that line.

  Comments denoted by /* and */ cannot be nested. For example, the following lines are erroneous:

```
/*  This is the illustration
    of the turbine engine
    /*  for the air blower,  */
        which runs on 220V   */
```

- Spaces and new lines are insignificant. You can insert as many spaces as you want between words and you do not have to divide the statements into lines.

Document Conventions

This document uses four types of tokens:

1. Tokens that appear in the ILS file as is.
2. Composed token defined below the token.
3. Composed token definition defined below the token.
4. Simple token definition defined in the same line.

To help you locate and identify information easily, this document uses visual cues. The following typographical conventions are use in this document.

Type styles	Used for
Bold	Token that appears as is.
'italic'	Composed tokens defined below.
Italic:	A definition of a previously declared token.

This document uses predefined operators to define correlation between other declarations and definitions. The following operators are not used in the ILS file it self.

Operator	Definition
[ ]	Expression enclosed in the square parentheses are OPTIONAL.
[* *]	Expression enclosed in the [* *] is optional unless mentioned else in a following remark
[x]	Expression enclosed in the [x] is optional but if it appears, another following expression (enclosed with the same [x]) must also appear. If the first expression doesn't appear, the appearance of the second expression is STILL OPTIONAL.

[[ ]]	Double square parentheses means that one square parentheses MUST appear in the ILS file.
|	Logical OR.
&|	Logical AND OR.
##n	Tokens between # and #n appears 1-n times.
//	Indicates that the following is a remark and not part of the ILS file.
>>>	Indicates that this line and the next one appear as one in the ILS file.

ILS file structure:
'Header'
'General data on the VP'
'Description of the objects'

Header:

```
/************************************************************
 * File:   'file name'                                      *
 * Date:   'date'                                           *
 * User:   'user name'                                      *
 * Source:  'image name'                                    *
************************************************************/
```

General data on the VP:
'Version number'
'Background color'
'Grid data'
'Layers data'
'Fonts data'
'Zones data'

Version number:
VERSION *'ver num'*

Background color:

BACKGROUND COLOR: *'rgb'*

Rbg:
(*'R'* **,***'G'***,***'B'***)**

Grid data:
GRID:
DX=*'dx'* **DY=***'dy'* *'setup units'*
ORIGIN: *<'x origin'***,***'y origin'>*
SNAP: *'on/off'* **SHOW:** *'on/off'*

Layers data:
LAYERS:
"*'layer name'*" *'from scale' 'to scale'* **GROUP= '***group' #n*

Fonts data:
FONTS:
"*'font style'*" "*'font name'*" *<'font type'> 'font direction' 'font data'*
FONTS SIZE: *'font size'* #n

Zones data:
ZONES:
"*'zone name'*" *<* *'x zone'* **,** *' y zone' >* *'scale number'* #n

Description of the objects:
#' object ' #n

object:
'Simple object' | *'Composed object'*

Simple object:
'Graphical object' | *'Special text object'* | *'Widget object'* | *'Sgf object'*

Graphical object:
'box object' | *'circle object'* | *'ellipse object'* | *'circarc object'* | *'poly object'* | *'pipe object'* | *'button object'*| *'simple text'*

box object:
OBJECT BOX *'object number'* **{**
'General data' [**ROUNDED**]
'box position'
[*'Trigger definition'*]
}

circle object:
OBJECT CIRCLE *'object number'***{**
'General data'
'circle-ellipse position'
[*'Trigger definition'*]
}

ellipse object:
OBJECT ELLIPSE *'object number'* **{**
'General data'
'circle-elipse position'
[*'Trigger definition'*]
}

circarc object:
OBJECT CIRCARC *'object number'* **{**
'General data' [**CLOSED**]
'circarc position'
[*'Trigger definition'*]
}

poly object:
OBJECT POLY *'object number'* **{**
'General data'
'poly position'
[*'Trigger definition'*]
}

pipe objec:
OBJECT PIPE *'object number'* **{**
'General data'
'pipe position'
[*'Trigger definition'*]
}

Button object:
OBJECT BUTTON *'object number'* **{**
'General data'
FONT="*'font style'***"**
FACENAME= "*'font name'***" TEXT_SIZE=** *'font size'* **T_***'font direction'* **T_***'font data'*
'box position'
CAPTION: "*'text'***"**
[*'Trigger definition'*]
}

simple text :
OBJECT TEXT *'object number'* **{**
'General data'
'text information'
[*'Trigger definition'*]
}

General data:
LCOL=*'rgb'* **FCOL=***'rgb'* **PATTERN=***'pattern num' 'filled'*
LAYER="*'layer name'***"**

Box position:
VERTICS: <*'x1 pos'***,***'y1 pos'*> <*'x2 pos'***,***'y2 pos'*>

poly position:
VERTICS: # <*'x1 pos'***,***'y1 pos'*> #n // n - number of vertexes in the poly.

Circle-ellipse position:
CENTER: *<'x1 center','y1 center'>* **PARAMS:** *<'Righted point on the circumference'> >>>*
<'Leftward point on the circumference'>

Righted point on the circumference:
<'x1 pos','y1 pos'>

Leftward point on the circumference:
<'x1 pos','y1 pos'>

Pipe position:
WIDTHIN=*'widthin'* **WIDTHOUT=***'widthout'*
VERTICS: # *<'x1 pos','y1 pos'>* #n // n - number of vertexes in the pipe

Circarc position:
<'x left','y left'> <'x top','y top'> <'x right','y right'>

text information:
START: *<'x1 pos','y1 pos'>* **FONT="***'font style'***"**
FACENAME= "*'font name'***" TEXT_SIZE=** *'font size'* **T_***'font direction'*
T_*'font data'*
[* **STRING="***'text'***"** *] //NOT optional when the object is a *'simple text'* object.

Trigger definition:
'Data entery' | *'Action'* | *'Smooth'* | *'Buttons'* | *'Bit trigger'* | *'Momentary'*

Data entry:
TRIGGER DIRECT {
GATE="*'tag name'***"**
POSITION=*<'x1 pos','y1 pos' >*
}

Action:

TRIGGER IMMEDIATE {

[* **GATE="***'tag name'***"** *] // NOT optional incase that a FORMULA is defined in the next line.

FORMULA="*'formula'***"** &| **ZONE="***'zone name'***"** &| **MACRO="***'macro name'***"**

}

Smooth:

TRIGGER SMOOTH {

GATE="*'tag name'***"**

POSITION=<*'x1 pos'***,***'y1 pos'* **> MINVAL=***'low val'*

MAXVAL=*'high val'*

}

Buttons:

TRIGGER BUTTONS {

[**GATE="***'tag name'***"**]

POSITION=<*'x1 pos'***,***'y1 pos'* **>**

BUTTON WIDTH='x1' **BUTTON HEIGHT=**'x2'

'buttons order' [*'extra buttons'*]

TITLE="*'text'***"**

LEGEND="*'text'* **"** *'operation'* #n

}

Operation:

VALUE=*'x1'* &| **ZONE="***'zone name'***"** &| **MACRO="***'macro name'***"**

Bit trigger:

TRIGGER BIT {

GATE="*'tag name'***"**

POSITION=<*'x1 pos'***,***'y1 pos'* **>**

}

Momentary:

TRIGGER MOMENTARY {
GATE="*'tag name'***"**
DOWN_FORMULA="*'formula'***"** **UP_FORMULA="***'formula'***"**
}

Special text object:

'Digital display' | *'Date'* | *'Time'* | *'Sectime'* | *'Text table'* | *'string tag'*

Digital display:

OBJECT DIGITAL DISPLAY *'object number'* **{**
GATE="*'tag name'***"** *'display mode'* **FORMAT=***'x1'* *'digital options'*
'general data'
' text information'
[*'Trigger definition'*]
}

Date:

OBJECT DATE *'object number'* **{**
'Special text data'
[*'Trigger definition'*]
}

Time:

OBJECT TIME *'object number'* **{**:
'Special text data'
[*'Trigger definition'*]
}

Sectime:

OBJECT SECTIME *'object number'* **{**
'Special text data'
[*'Trigger definition'*]
}

String tag:

OBJECT DIGITAL DISPLAY *'object number'* **{**

'Special text data'

[*'Trigger definition'*]

}

Special text data:

GATE="*'tag name'***"**

'general data'

'text information'

Text table:

OBJECT TEXT TABLE *'object number'* **{**

GATE="*'tag name'***"** **FILE="***' file'***"**

'general data'

'simple text position'

[*'Trigger definition'*]

}

Widget object:

'Widget slider' | *'widget mediaplayer'*

Widget slider:

OBJECT WIDGET SLIDER *'object number'* **{**

LAYER="*'layer name'***" [[** *<'x1 pos','y1 pos'> <'x2 pos','y2 pos'>***]]**

SLIDER SPECIFICATION:

{

GATE="*'tag name'***"** **VALUE_ASSIGNMENT=***' value assignment'*

SNAP=*'bit'*

LIMITS: DEFAULT=*'bit'* **FROM=***'low val'* **TO=***'high val'*

PRIMARY=*'x1'*

TICKS_POS=*'ticks pos'*

BORDER=*'bit'*

}

}

widget mediaplayer:

OBJECT WIDGET MEDIAPLAYER *'object number'* **{**
LAYER="*'layer name'***"**
MEDIAPLAYER SPECIFICATION:
{
DEVICE_NAME="*'file'***"**
HAS_TITLE=*'bit'*
TITLE_NAME="[*'text'*]**"**
}
}

Sgf object:

OBJECT SGF *'object number'* **{**
LAYER="*'layer name'***" [[** *<'x1 pos','y1 pos'> <'x2 pos','y2 pos'>***]]**
>>>
"*'file'***"**
[*'Trigger definition'*]
}

Composed object:

'Group object' | *'Dynamic object'* | *'Cluster object'* | *'Alarm object'*

Group object:

OBJECT SEGMENT *'object number'* **{**
GROUP OBJECTS {
'objects in segment' #n
}
}

objects in segment:

'Graphical object'
&| *'sfg object'*
&| *'Group object'*

Dynamic object:
OBJECT DYNAMIC *'object number'* **{**
'Dynamic options'
DYNAMIC OBJECTS {
'objects in dynamic'
}
}

Dynamic options:
'simple dynamic' | *'composed dynamic'*

simple dynamic:
'move' | *'sclae'* | *'rotate'* | *'fill'* | *'show'* | *'empty'* | *'drum'*

move:
*'move style'***: GATE="**'tag name'**" VAL0=***'x1'* **DX=***'dx'* **DY=***'dy'*
FROM=*'low val'* **TO=***'high val'*

scale:
SCALE: GATE="*'tag name'***" VAL0** *'x1'* **REF_POINT=<***'x1 pos'***,***'y1 pos'***>** *>>>*
SX=*'x2'* **SY=***'x3'* **FROM=***'low val'* **TO=***'high val'*

rotate:
ROTATE: GATE="*'tag name'***" VAL0=***'x1'* **REF_POINT=<***'x1 pos'***,***'y1 pos'***>** *>>>*
ANGLE=*'x2'* **FROM=***'low val'* **TO=***'high val'*

Fill:
FILL: GATE="*'tag name'***" VAL0=** *'x1'* **BOX0= [[** *<'x1 pos',y1 pos'><'x2 pos',y2 pos'>***]]** *>>>*
DX=*'dx'* **DY=***'dy'* **FROM=***'low val'* **TO=***'high val'*

Show:
SHOW: GATE="*'tag name'***" START=***'low val'* **END=***'high val'*

Empty:
EMPTY: GATE="*'tag name'***" START=***'low val'* **END=***'high val'*

Blink:
BLINK: GATE="*'tag name'***"**
 # 'blink range' #10

blink range:
START=*'low val'* **END=***'high val'* **RATE=***'rate'*

drum:
DRUM: GATE="*'tag name'***" MASK="***'mask'***"**

Composed dynamic:
[1 *'lcol'*] [2 *'fcol'*] [3 *'pattern'*] //those are optional according to the tag values while saving to ILS.
 # 'simple dynamic' #n
[1 *'lcol data'*]
[2 *'fcol data'*]
[3 *'pattern data'*]

lcol:
LCOL= *'rgb'*

fcol:
FCOL= *'rgb'*

pattern:
PATTERN= *'x1'*

lcol data:
LCOL: GATE="*'tag name'* **"**
START= *'x1'* **END=** *'x2'* **VAL=** *'rgb'*

fcol data:
FCOL: GATE="*'tag name'***"**
START=*'x1'* **END=***'x2'* **VAL=** *'rgb'*

pattern data:
PATTERN: GATE="*'tag name'***"**
START=*'x1'* **END=***'x2'* **VAL=***'color'*

objects in dynamic:
'Graphical object'
&| *'Special text object'*
&| *'sfg object'*
&| *'Group object'*

cluster object:
OBJECT CLUSTER INSTANCE *'object number'* **{**
NAME: "*'text'* **"**
LIBRARY: "*'text'***" CLUSTER:"** *'text'* **"**
PLACED SCALE: *'x1'*
INSTANCE OBJECTS {
'object ' #n
}
}

Alarm objec:

OBJECT ALERT *'object number'* **{**
STATION: *'text'*
FAMILY: "*'text'***"**
SHOW WHEN: *'show option'*
[**BLINK:***'blink action time'*]
[**FILL COLOR:***'colorl action time'*]
[**LINE COLOR:** *'color action time'*]
TRIGGER: *'trigger options'*
ALERT OBJECTS {
 # 'objects in alarm' #n
}
}

Blink action time:

STARTED=*'rate'* &| **ACKED=***'rate'* &| **ENDED=***'rate'*

Color avtion time:

STARTED=*'color'* &| **ACKED=***'color'* &| **ENDED=***'color'*

Objects in alarm:

'Graphical object'
&| *'Special text object'*
&| *'sfg object'*
&| *'Group object'*

file name:	String	The ILS file name.
Date:	Date mm/dd/yy	Date in which the ILS file was created.
user name:	String	Name of the user who created the ILS file.
image name:	String	The source image.
Xn:	Number	Present what writtens in the token before. (can be x1,x2...)

Text	String	The strings that the user prints in the image.
Bit:	Number	**0** | **1**
Dx	Number	
Dy	Number	
Ver num:	Number	Wizcon's version.
R:	0<=Number=<255	First value of an RGB color.
G:	0<=Number=<255	Fecond value of an RGB color.
B:	0<=Number=<255	Third value of an RGB color.
x step:	Number	Distance between points of the grid along the x axis.
y step:	Number	Distance between points of the grid along the y axis.
x origin:	Number	X parameter of the grid's start point.
y origin:	Number	Y parameter of the grid's start point.
setup units:	String	**WORLDS** | **PIXELS**
on/off:	String	**ON | OFF**
layer name:	String	Name of the layer in uppercase.
from scale:	Number	Lowest scale included in that layer.
to scale:	Number	Highest scale included in that layer.
Group:	Hex. Number	Group authorization for that image.
font style:	String	Style of the font (which the user sets when he define a new font).
font name:	String	Font name.
Font type:	Character	**B** (for bitmap) | **V** (for vector)
font direction:	String	**LR** | **RL** | **TB** | **BT**
font data:	String	**BLD** &| **ITL** &| **UND** &| **STK**
font size:	Number	Size of the font.
Zone name:	String	The name of the zone that the user wrote when he defined it.
x zone:	Number	The x parameter of the zone's center point.
y zone:	Number	The y parameter of the zone's center point.
scale number:	Number	The scale of that zone.
Object number:	Index (starts with 1)	Index of the object .

Pattern num:	Number	Pattern of the object.
Filled:	String	**EMPTY** | **FILLED**
X1 pos:	Number	X parameter of a point
Y1 pos:	Number	Y parameter of a point
X1 center:	Number	X parameter of a center point
Y1 center:	Number	Y parameter of a center point
Widthin:	Number	Width in
Widthout:	Number	Width out
X left:	Number	X parameter of the left point
Y left:	Number	Y parameter of the left point
X top:	Number	X parameter of the top point
Y top:	Number	Y parameter of the top point
X right:	Number	X parameter of the right point
Y right:	Number	Y parameter of the right point
Tag name:	String	The tag that the user entered.
Formula:	String	Formula entered by the user
Macro name:	String	The name of the macro
High val:	Number	
Low val:	Number	
Buttons order:	String	**HORIZ.** | **VERT.** | **RECT.**
Extra buttons:	String	**+CANCEL** &| **+HELP**
Display mode:	String	**DEC.** | **HEX.** | **ENG.**
Digital options:	String	**LEFTJUSTIFY** &| **+PREFIX** &| **LEADZERO**
File:	String	Name of the file.
Value assignment:	String	**DRAGTOIMG_DROPTOPLC** | **ON-DRAGGING** | **ON-DROPPING**
Ticks pos:	String	**RIGHT_BOTTOM** | **LEFT_TOP** | **BOTH_SIDES**
Show option:	String	**ALWAYS** &| **ACTIVE** &| **NOT ACTIVE**
Rate:	String	**FAST** | **MEDIUM** | **SLOW**
Color:	0<=Number<16	Index of the color in the color table.
Trigger options:	String	**ACK &| ACK WITH CONFIRM** &| **ASSIST** &| **ASSIST WITH ACK** &| **NONE**

Move style:	String	**MOVE1**| **MOVE2**
Mask:	String of 32 '*'	**Each '*' can be replaced by '1' or '0' to indicate on or off bit.**

The following is an example of an Image ASCII file:

```
* File:   EXAMPLE.ils        *
 * Date:   10/27/97          *
 * User:   1                 *
 * Source: EXAMPLE.img       *
 ***************************/

VERSION: 7.0
BACKGROUND COLOR: (255,255,255)
GRID:
DX=500   DY=500  WORLD
ORIGIN: <0,0>
SNAP: OFF  SHOW: OFF

LAYERS:
"BASE "                   1 2048 GROUP=0xffffffff

FONTS:
"Default"            "System"         <B> LR BLD
   REAL_SIZE: 185 x 423

ZONES:
"OVERVIEW"            <      120 ,       55 >   64

OBJECTS:
OBJECT CIRCLE 1 {
   LCOL=(  0,  0,128) FCOL=(  0,255,  0) PATTERN=15 FILLED
LAYER="BASE"
   CENTER: <-3202,1000> PARAMS: <578,0> <0,578>
}
OBJECT PIPE 2 {
   LCOL=(128,128,  0) FCOL=(  0,255,255) PATTERN=15 FILLED
LAYER="BASE"
   WIDTHIN=100 WIDTHOUT=200
   VERTICES: <-386,-3742> <1484,-1455> <2977,-3175>
}
OBJECT BOX 3 {
   LCOL=(  0,255,  0) FCOL=(  0,  0,255) PATTERN=15 FILLED
LAYER="BASE"
   VERTICES: <5755,-4102> <10801,925>
}
```

Appendix H
Glossary

All Containers

(See Containers Tree).

Analog Tags

Tags that have numeric values represented in various formats (signed or unsigned integer, floating point, BCD).

Alarm

Wizcon 7 Alarms are internal system messages that provide the operator with information concerning events generated by the system. Alarms are displayed in the Events Summary and Popup Events Summary windows. Alarms are defined in the Wizcon Application Studio by right-clicking **Alarms** in the All Containers section and selecting **Add Alarm**, clicking the **Alarm** button in the toolbar, or by selecting **Add Object/Alarm** from the *Design* menu.

Alarm Help Files

Alarm Help files are user-created ASCII files that contain help messages. These messages appear on the screen when specific alarms are issued. Each file can include only one explanation for one alarm.

Help files can be created using a text editor. Simply start a new file and type the desired message. Help files can have any name, but must have the extension .AHP. All Help files should be placed in one directory.

API

A Wizcon API (Application Programming Interface) is a function that can be called from add-on programs to perform basic Wizcon 7 operations.

Since Wizcon APIs can be called from add-ons written in the C or Visual Basic programming language, basic programming knowledge is required to use them.

Authorization

Authorization in Wizcon 7 refers to the ability to limit operator access to system facilities. This powerful feature enables the system engineer to control access to the various Wizcon 7 components and modules, such as menu items, tags, macros, and graphical objects.

Basket

A Basket is a special tool that is used to make a prototype of the application before starting to actually implement it, and also to trace the progress of the application development. You can specify in the basket the components needed in your application, such as 12 valves, two reactors and three pumps. Think of the Cluster Basket as a shopping list.

All basket operations are also logged in a file called BASKET.LOG that describes who takes or adds items from and to the application basket, and when. The system contains only one basket, kept in an ASCII file, BASKET.DAT, that can be edited to ensure fast and simple image design.

Block

A Block is a series of addresses in a PLC. By defining blocks, you can increase communication speed between Wizcon and the PLC.

Chart

A Chart displays historical or online tag values in graphical drawings. Each chart can include up to 16 graphs, each representing a different tag.

Charts are defined in the Wizcon Application Studio by right-clicking **Charts** in the All Containers section and selecting **New Chart**, or by clicking the **Chart** button in the toolbar.

Clusters

A cluster is an object class with all its behavior, including parameters, the graphical shape and tag and alarm functions. For example, a valve cluster may include the valve's graphic shape, a status tag, an alarm condition, and an open/close trigger operation.

Containers Tree

This is a list tree that represents the various elements of Wizcon 7. The Containers Tree area is made of two main groups: Files and Objects. The root of the Tree is the station or application name. Whenever a tree item is selected, a list of the container's content is displayed in the right hand side of the Wizcon Application Studio.

Control Panel

The control panel is displayed in the Wizcon Application Studio when the root of the tree is selected in the All Containers section. It displays such items as: Wizcon Language Definition, Communication Driver Definition, Single Tag dialog, Multiple Tags utility, and settings such as Authorization and Network.

Communication Driver

Communication drivers control the computer-PLC communication channels. They are used to connect different PLCs, industrial instruments and remote computers to your computer. Different communication drivers are used for different PLCs. Each communication driver translates general read/write instructions into a set of detailed commands for the PLC.

Communication drivers are defined in the Wizcon Application Studio by selecting **Communication Drivers** from the *Design* menu, or by double-clicking the **Communication Drivers** icon in the Control Panel.

Compound Tag

A Compound tag is a linear calculation based on values of other tags.

Compress Tag Definition

Every tag in the system possesses a unique ID number. When a tag is deleted its ID is reserved and cannot be assigned to another tag. Therefore, when a tag is deleted it creates a hole in the ID tag numbers. Use the **Compress** option to avoid this problem. This option enables the user to arrange all available tags IDs in the system, in consecutive order.

Data Box

A Data Box is a supplementary window that can be invoked in the Chart module, to provide graph tags, values, and descriptions.

DDE

Wizcon 7 can communicate on-line with other applications through the DDE (Dynamic Data Exchange) interface. DDE is a common protocol that allows OS/2 and Windows NT applications to exchange data freely, using either one-time data transfers, or ongoing transfers in which applications send updates to each other whenever new data is available.

Digital Tags

Discrete logic tags that have Boolean values of TRUE (1) or FALSE (0).

Dummy Tags

Dummy tags represent internal variables and are used for a variety of calculations, control and other application related needs. Dummy tags are updated by user input or changed by other application modules. These tags are set to 0 upon system initialization.

Dynamic Object

Dynamic Objects are objects in images that are defined to change graphically or textually according to the value changes of tags with which the objects are associated.

Dynamic objects are defined by selecting an object, and then selecting **Operations** and then **Dynamic** from the *Edit* menu in the image window, or by selecting the **Dynamic Definition** icon in the **Objects** toolbar.

Elaborating Zoom

The Elaborating Zoom is a technique used in Wizcon 7 images to obtain detailed views of specific plant or facility sections.

When the Elaborating Zoom mode is active, each layer in an image will be viewed according to the scale range specified in the Layer Definition procedure. When the mode not active, the layers will appear in the image, even if scale ranges were not defined for them.

The Elaborating Zoom mode can be toggled on and off by selecting **Elaborate On** from the *Layers* menu, in the image.

Events Summary

The Events Summary is a Wizcon 7 module used to display online and historical alarms. Several operations (such as acknowledge) can be performed on the alarms displayed in the Events Summary.

In addition to the Events Summary, a pop-up Events Summary can also be defined to appear on the screen immediately, whenever severe alarms occur (see Popup Events Summary).

Events Summaries are defined in the Wizcon Application Studio by right-clicking **Events Summary** in the All Containers section and selecting **New Events Summary**, or by clicking the **Events Summary** button in the toolbar.

File Lists

Under the Files list in the Wizcon Application Studio, you can find Wizcon 7 elements that are stored as files. These include the Windows, Images, Charts, Events Summaries and History Viewer, Recipes, Layout and Reports.

You can add windows, such as Image, to its list by dragging and dropping the file from the Windows Explorer. Double-clicking on a window in the list opens it. To open a new window, right-click and select **New [window]** from the pop up menu item.

GLS File

GLS files are tag list files in ASCII format that you can edit, add to or replace with the existing Wizcon 7 tag list.

Graph

A Graph is a tag display defined for a specific chart. Each chart can include up to 16 graphs. Graphs can appear in the format of bars, lines, lines with markers, or markers only. The *Graphs Definition* dialog is invoked by selecting **Graphs Definition** in the *Setup* menu of the Chart window.

Group

A group is a collection of objects that act as one object. Groups can be ungrouped, and their attributes can be edited the same way as any other object.

Groups are defined by selecting **Operations** and then **Group** from the Image *Edit* menu, or by selecting the **Group** icon in the **Objects** toolbar.

History Viewer

The History Viewer module in Wizcon 7 can be used to generate lists of historical tag values for analysis purposes. The tag list generated by the module can be filtered to include only specific tags in the list.

The historical tag lists appear in History Viewer windows which are created in the Wizcon Application Studio by right-clicking **History Viewer** in the All Containers section, or by double-clicking the **History Viewer** icon in the toolbar.

Hot Backup Station

For applications that require the highest degree of reliability, Wizcon 7 provides the Hot Backup redundant configuration. This configuration consists of two identical Wizcon SCADA stations. Both stations are connected to the same PLCs, but one station is running in the Master mode and samples data in the field, while the second station (Backup station) remains in a Stand-By mode. When the Master station goes down, the Backup station switches to the Master mode, starts to sample PLCs and distributes real-time data to other stations across the network.

In addition to real-time redundancy, the Hot-Backup feature ensures the integrity of historical databases. After the Master station recovers, the backup station updates the Master station with the missing historical data. This mechanism ensures that the historical database on the Master stations remains complete.

Image

An image is a graphical drawing of a plant or facility, that can include dynamic and static objects. Wizcon 7 images are drawn in layers, whereby each image can consist of one or more layers that can be zoomed into, to obtain detailed views of specific plant sections.

Images are created in the Wizcon Application Studio by right-clicking **Images** in the All Containers section and selecting **New Image**, or by clicking the **New Image** icon in the toolbar

Instantiation

Once you place a cluster in an application you create an instance. The action of creating a separate instance of the object or function is called instantiation. One cluster can have many different instances, each with the specific characteristic that you define according to your application's needs. For example, each instance can be associated with a different set of tags and alarms that you defined when creating a new instance.

Layer

A layer is a specific level of an image in which additional information is added and can only be seen in that layer. An application can consist of many layers. Different types of plant information can be shown on different layers. It is used to provide a more detailed view of a particular section of the plant. When a problem arises in a particular part of the plant, you can display that layer to see additional information to help you solve the problem.

Layout

A Layout is a set of Wizcon7 windows in the Wizcon Studio Application, saved in a file. Layouts are saved, loaded, and deleted using the *File* menu items in the Studio. Layouts enable you to maintain continuous control of the plant. By saving a particular layout, you can ensure the specific window combination will be available whenever you need it.

Each layout should be assigned a unique name for filing operations. Remember that whenever you specify layout names, the default layout path will always be used as the default location. The default path is defined in the *Paths* dialog which is opened by selecting **Options** and then **Paths** from the *Design* menu.

Note that you can cause a specified layout to be loaded automatically whenever specific operators login to the system.

List Area

The area where a list of the container's contents is displayed in the right hand side of the Wizcon Application Studio.

Macro

Macros are special programs that execute pre-defined actions, commands, or programs, whenever designated keys or key combinations are pressed.

Wizcon macros simplify the execution of complex operations, and enable you to perform a series of functions with one keystroke. This enhances overall Wizcon 7 functionality and saves you the time and effort of having to execute Wizcon 7 operations in several stages.

Wizcon 7 macros can be defined for system functions or for trigger objects. Macros are defined in the Wizcon Application Studio by double-clicking the **Macro** icon in the Control Panel, or selecting **Macros** from the *Design* menu.

Management View Station

Wizcon 7 Management View stations bring real-time and historical data from the plant floor to any desktop in the organization. Management View stations can display data collected by one or more SCADA stations. In addition to displaying the data the form of Images, graphs and reports, Management View stations provide the necessary functions for interacting with on-going activities. Each command for changing process parameters or downloading a recipe is immediately transferred to the appropriate Wizcon 7 SCADA stations. Since the Wizcon 7 Server handles the communication, this process does not affect time-critical operations on the plant-floor. A Management View Station cannot operate without a Server station.

Model

A Model is a prototype list of tags from which recipes are derived. Models must be defined before recipes, and each recipe must belong to a model. (See Recipes.)

Momentary Trigger

A Momentary Trigger is an object that is used to change a tag value in a one-shot way. Usually, such operations are required for a digital tag that controls some field operation that is activated by a high value (one 1) for a short period of time, followed by a low value (zero 0). All tags can be used for the Momentary Trigger including string tags.

Network

A computer network consists of several computers linked together, to enable data to be transferred from one computer to another. Several Wizcon 7 stations can be linked together in a network, so that Wizcon 7 reports, charts, tag values, recipes, and images can be transferred from one station to another.

Wizcon 7 network definition and configuration is performed from the Wizcon Application Studio, by selecting the options in the *Network* menu.

Object Lists

The objects branch in the All Containers section of the Wizcon Application Studio, includes a list of Tags and Alarms. Right-clicking on any object displays its properties.

PLC

A PLC (Programmable Logic Controller) is a field device used to control external machines and equipment. Wizcon 7 uses communication drivers to communicate (read and write values) with the PLC. Wizcon 7 supports the use of more than 100 PLCs from different vendors.

PLC Tags

A PLC tag represents data from a PLC memory. These tags are associated with external devices and mapped on the external device variables (for example, PLC register).

Wizcon 7 samples these tags periodically through the communication driver so that changes of value in the field device variable are automatically transferred to the associated tag. Also, the change of PLC tag value in Wizcon 7 is immediately recognized in the external device.

Each PLC tag is associated with a specific PLC register, defined as Tag address in Wizcon 7 tag definition. The format of a tag address varies from one PLC to another and depends on the PLC memory structure, internal architecture and communication protocol. When exchanging data between Wizcon 7 tags and PLCs, the communication driver for the specific PLC should be installed.

Popup Events Summary

A Popup Events Summary appears on the screen immediately when a severe alarm occurs.

The Popup Events Summary can be designed to display alarms in different colors, and include different titles. In addition, the Popup Events Summary can be defined to buzz for specific alarms.

Popup Events Summaries are defined by selecting **PopUp Settings** from the *Design* menu in the Wizcon Application Studio.

Project Tree

This is a list tree that represents the various elements of Wizcon 7. The All Containers section (Containers Tree) area is made of two main groups: Files and Objects. The root of the Tree is the station or application name. Whenever a tree item is selected, a list of the container content is displayed in the right hand side of the Wizcon Application Studio.

Recipe

A recipe is a list of tag values that can be saved and applied in specific control processes as a group, to cause the process to enter a desired state.

When a recipe is applied, the tags associated with that recipe will be set to the corresponding values that you specified during the recipe definition procedure.

In Wizcon 7, each recipe belongs to a *Model*. Models are used to group recipes and provide the list of tags from which the recipes are derived.

Models must be defined before recipes. Models are defined in the Wizcon Application Studio, by right-clicking **Model Recipes** and **selecting New Recipe Model**, or by clicking the **New Recipe Model** button in the toolbar A recipe can then be defined by double-clicking **Model Recipes** then right-clicking on a model and selecting **New Recipe**.

Reference Graph

A reference graph is a graph with a predefined set of values chosen by the engineer. The values are either supplied manually or taken from the history of a specific tag in a specific time period. A reference graph is attached to a standard graph and is used to graphically represent the desired behavior of the standard graph. The operator can graphically compare the actual behavior of a tag with the desired one.

Report

See User-Defined Report.

SCADA

Wizcon 7 is a Supervisory Control and Data Acquisition (SCADA) system.

SCADA is a common process control application that collects data from sensors on the factory floor or in remote locations and sends them to a central computer for management, monitoring and control. It is used in many diverse industries such as oil and gas, as well as water, waste-water and electrical systems.

Server

To isolate and avoid overloading SCADA stations that control real-time data, the Wizcon 7 Server buffers and redirects data exchange transactions between the Management View stations to the plant floor.

The Wizcon 7 Server collects requests from the Management View stations and transfers them to the appropriate SCADA stations. In response to these requests, the Wizcon Server continuously receives updated messages about tags and alarms and dispatches them to the Management View stations.

In addition to routing real-time data, the Wizcon 7 Server can collect data from the SCADA stations and record selected data in historical databases. These databases can reside on the Wizcon 7 Server's local disk or on the network file server and are shared among all stations across the network. Since Wizcon 7 stores the data in a common format, users can access this data from both Wizcon 7 stations and other applications without having to deal with format conversion.

This configuration allows users to efficiently distribute computer power among different computers and PLCs, optimizes network resource consumption, and ensures that time-critical missions will be completed without any interference.

String Tags

Tags that are defined to receive alphanumeric strings.

Tag

A Tag is a contact point through which Wizcon 7 receives data from the controller and/or outputs data to it. Tags can be analog, digital, or compound. Compound tags are tags for which the values are the result of a combination of two other tags. In addition, you can define Dummy tags. These tags are not actual contact points with the PLC, but can be used to store specific values.

Tags are defined in the Wizcon Application Studio by selecting **Add Object** and then **Tags** from the *Design* menu, by clicking the **Add Tag** icon in the toolbar, or by right-clicking **Tags** in the All Containers section and selecting **Add Tag**.

TCP/IP

Transmission Control Protocol/Internet Protocol (TCP/IP) is a communications protocol that provides effective and reliable communications between computers within a network and between different networks.

Tokens (Clusters)

The use of a variable or operator in an application to enable customized tag creation and identification upon Instantiation. These tokens can be used in the **Tag Name**, **Address**, and **Description** fields to enable customized tag attribute generation. Tokens can also be used to easily create and identify alarms. This applies for Tag name, Family, Help File and text fields in the dialog. $ASK (“text”[, from-to) or $ID(from-to]) ‘[..]’ brackets specify an optional parameter.

Trigger Object

A Trigger Object is an object in an image defined to execute a specific operation whenever it is selected.

Trigger objects are defined by selecting the **Operation/Trigger** from the *Edit* menu in the image, or by selecting the trigger icon from the **Objects** Toolbar.

User-Defined Report

User defined reports are customized reports that contain free text and calculated field data. Reports are defined in the Wizcon Application Studio by right-clicking **Reports** in the All Containers section and selecting **New Report**, or by clicking the **New Report** icon in the toolbar.

VFI

VFI (Virtual File Interface) is an interface layer through which WizPro writes and reads data to and from files, in a format that databases can use.

Window

In Wizcon 7, windows are used for Charts, images, Events Summaries, and History Viewers.

Wizcon Application Studio

The Wizcon Application Studio includes all relevant objects and files needed to run and manage an application. It has an Explorer-like interface from which the application developer has full control and access to all parts of the application.

Wizcon Language

Wizcon Language is a simple but powerful tool used to enhance Wizcon 7 performance by issuing commands, handling alarms, and communicating with external applications.

Wizcon Language is generally used to issue sophisticated commands to the PLC, that are either too complex, or simply impossible to program directly into the PLC.

Wizcon Language operational parameters are defined in the Wizcon Application Studio by selecting **Wizcon Language** and then **Settings** from the *Design* menu.

Wizcon Language commands are defined by selecting the **Wizcon Language** and then **Definition** from the *Design* menu, or by double-clicking the **Wizcon Language** icon in the Control Panel.

Wizcon SCADA Station

Wizcon 7 SCADA station is an operations station that can communicate with up to 16 networks of PLCs simultaneously. This station performs functions such as sampling PLCs, generating alarms, collecting historical data and performing control operations. The operator can view the process through the Wizcon 7 user-interface and interact with on-going activities. The Wizcon 7 SCADA station can receive and send data to other network stations.

Wizcon SCADA View Station

The Wizcon 7 SCADA View station is a full operational station that allows operators to view and control the process. This station automatically receives all the online and historical data from the SCADA stations, as required. The operator can transparently interact with the process using Wizcon 7 images, Charts and other standard modules. The Wizcon 7 SCADA View station serves as a mirror of the real-time and historical data from one or more SCADA stations. The SCADA View Station is not connected to a PLC, it is connected to SCADA Stations via a network.

WizPro

WizPro is the real-time kernel that manages the Wizcon 7 system. The WizPro kernel enables other programs to share the Wizcon 7 resources and run parallel to it, either locally or on remote stations.

In addition to managing Wizcon 7, WizPro add-on programs can be written to enhance Wizcon 7 functionality and meet specific plant requirements.

Write History

This option enables you to stop the logging of all tag data in the system. When the write history option is enabled tag values are logged according to tag definition. When this option is disabled, no logging occurs.

Zone

A Zone is a specific area in a Wizcon 7 image marked for navigational purposes. Once defined, zones can be used in go-to and macro operations, to cause specific image sections to fill the image area of the window immediately.

Zones are defined by selecting **Zones Definition** from the *Options* menu in the Image window.

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